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D13

Resgent Jet Printer
Pattern Entry/Modification

PAGE 12
07-05-86
10:46:13

Offset Data Source Line IBM Personal Computer BASIC Compiler V2.00

```

6      1054 02F4      RETURN
      1058 02F4
      1058 02F4      ITXSEARCH:
      1058 02F4      AS = INDEX:IF AS (<) ** THEN RETURN
      1070 02F4      GOTO ITXSEARCH
      1070 02F4      RETURN
      1081 02F4
      1081 02F4      NEWITXGDI:
      1084 02F4      IS = (ITX+48) + 7
      1090 02F4      IE = (ITX+48) + 8 + LEN(MENU(ITX))*8
      1100 02FC      LINE (IS,191)-(IE,199),1,8
      1101 02FC      RETURN
      1105 02FC
      1105 02FC      ITXBOXENASE:
      110A 02FC      LINE (IS,191)-(IE,199),0,8
      1131 02FC      RETURN
      1135 02FC
      1135 02FC      PLACECURSOR:
      113A 02FC      PUT (IX+1,YI+1),CURSOR1
      1157 02FC      RETURN
      1158 02FC
      1158 02FC      MOUSEACT:
      1160 02FC      GOSUB ANYKEY
      1166 02FC      DIZ = 0 : DYZ = 0
      1174 0300      IF AS = CHR$(10) + CHR$(172) THEN DYZ = -1:RETURN
      1190 0300      IF AS = CHR$(10) + CHR$(180) THEN DYZ = 1:RETURN
      11C6 0300      IF AS = CHR$(10) + CHR$(177) THEN DIZ = 1:RETURN
      11EF 0300      IF AS = CHR$(10) + CHR$(175) THEN DIZ = -1:RETURN
      1218 0300      IF AS = "8" THEN DYZ = -20:RETURN
      1232 0300      IF AS = "2" THEN DYZ = 20:RETURN
      124C 0300      IF AS = "4" THEN DIZ = -20:RETURN
      1266 0300      IF AS = "6" THEN DIZ = 20:RETURN
      1280 0300      IF AS = CHR$(27) THEN RETURN
      1297 0300      IF AS = CHR$(113) THEN RETURN
      12AE 0300      GOTO MOUSEACT
      12B2 0300
      12B2 0300      CURSORMOVE:
      12B7 0300      GOSUB PLACECURSOR
      12B9 0300      ON FLAG1 GOSUB ER1, ER2, ER3, ER4
      12CE 0300      IX = IX + DIZ : YI = YI + DYZ
      12E6 0300      IF IX < 0 THEN IX = 0
      12FB 0300      IF IX > 311 THEN IX = 311
      1308 0300      IF YI < 0 THEN YI = 0
      131D 0300      IF YI > 182 THEN YI = 182
      1330 0300      ON FLAG1 GOSUB DR1, DR2, DR3, DR4
      1341 0300      GOSUB DISPCURSOR
      1347 0300      RETURN
      1348 0300
      1348 0300      CORRECT:
      1350 0300      LOCATE 25,1:PRINT SPACE$(39);
      136D 0300      LOCATE 25,1:PRINT "IS THIS CORRECT? (Y or N) ";
      1387 0300      CORLOOP:
      138C 0300      GOSUB ANYKEY
      1392 0300      IF AS = "y" OR AS = "Y" THEN AS = "Y":GOTO CORRECT

```

IBM Personal Computer BASIC Compiler V2.00

Offset	Data	Source Line
5	13C5 0300	IF AS = "A" OR AS = "M" THEN AS = "N":GOTO COREIIT
	13FB 0300	GOTO CORLOOP
	13FB 0300	COREIIT:
	1400 0300	LOCATE 25,1:PRINT SPACES(39);
10	141D 0300	RETURN
	1421 0300	
	1421 0300	DISPCURSOR:
	1426 0300	GOSUB PLACECURSOR
	142C 0300	LOCATE 25,27:PRINT USING "+.###";IX * GRID;
15	1456 0300	PRINT " ";
	1463 0300	PRINT USING "+.###";YI * GRID;
	1480 0300	RETURN
	1484 0300	
	1484 0300	
20	1484 0300	RD1:
	1489 0300	LINE(SCNDATZ(I,1)+4,SCNDATZ(I,2)+4)-(SCNDATZ(I,3)+4,SCNDATZ(I,4)+4)
	1522 0300	RETURN
	1526 0300	
25	1526 0300	RD2:
	152B 0300	LINE(SCNDATZ(I,1)+4,SCNDATZ(I,2)+4)-(SCNDATZ(I,3)+4,SCNDATZ(I,4)+4),,B
		RETURN
	15C4 0300	
	15C8 0300	
30	15C8 0300	RD3:
	15CD 0300	LINE(SCNDATZ(I,1)+4,SCNDATZ(I,2)+4)-(SCNDATZ(I,3)+4,SCNDATZ(I,4)+4),,BF
		RETURN
	1667 0300	
	166B 0300	
35	166B 0300	RD4:
	1670 0300	RADIUSZ = SQR((SCNDATZ(I,3)-SCNDATZ(I,1))^2 + (SCNDATZ(I,4)-SCNDATZ(I,2))^2)
		CIRCLE (SCNDATZ(I,1)+4,SCNDATZ(I,2)+4),RADIUSZ,,,1
	16FF 0302	RETURN
	175D 0302	
40	1761 0302	DR1:
	1761 0302	LINE (XIIZ+4,YIIZ+4)-(XIIZ+4,YIIZ+4)
	1766 0302	RETURN
	17AF 0302	
	17B3 0302	
45	17B3 0302	DR2:
	17B8 0302	LINE (XIIZ+4,YIIZ+4)-(XIIZ+4,YIIZ+4),,B
	1801 0302	RETURN
	1805 0302	
	1805 0302	DR3:
50	180A 0302	LINE (XIIZ+4,YIIZ+4)-(XIIZ+4,YIIZ+4),,BF
	1854 0302	RETURN
	1858 0302	
	1858 0302	DR4:
	185D 0302	RETURN
	1861 0302	
55	1861 0302	ER1:
	1866 0302	LINE (XIIZ+4,YIIZ+4)-(XIIZ+4,YIIZ+4),0
	18AF 0302	RETURN
	18B3 0302	

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      Offset  Data    Source Line    IEM Personal Computer BASIC Compiler V2.00

10      18B3  0302    ER2:
      18B8  0302          LINE (X1Z+4,Y1Z+4)-(XZ+4,YZ+4),0,B
      1901  0302          RETURN
      1905  0302
      1905  0302    ER3:
      190A  0302          LINE (X1Z+4,Y1Z+4)-(XZ+4,YZ+4),0,BF
      1954  0302          RETURN
15      1958  0302
      1959  0302    ER4:
      195D  0302          RETURN
      1961  0302
      1961  0302    ANYKEY:
20      1966  0302          AS = ""
      1970  0302          WHILE AS = ""
      197F  0302          AS = INKEY$
      1989  0302          WEND
      198C  0302          RETURN
25      1990  0302
      1990  0302    GETNAME:      'prompt for and get filename
      1995  0302          LOCATE 25,1:PRINT SPACES(39);
      19B2  0302          LOCATE 25,38:PRINT "<<";      'boundary chevron
      19CC  0302          LOCATE 25,1:PRINT "Enter Pattern Name ";
30      19E6  0302          LINE INPUT; "",NAME$
      19F4  0302          RETURN
      19FB  0302
      19FB  0302    ' Data fields used by this module
      19FB  0302
35      19FB  0302    MN1:
      19FD  0302          DATA "DIR","LOAD","SAVE","DRAW","REPT","EXIT","",5
      19FF  0302
      19FF  0302    MN2:
40      1A04  0302          DATA "LINE","RECT","SRECT","CIRCL","REDRW","MAIN","",5
      1A06  0302
      1A06  0302    INSTRU:
      1A0B  0302          DATA 8,16,"USE ARROWS"
      1A0D  0302          DATA 10,9,"TO SELECT FROM THE MENU"
      1A0F  0302          DATA 14,12,"USE THE ENTER KEY"
45      1A11  0302          DATA 16,10,"TO ACTIVATE SELECTION"
      1A13  0302
      1A13  0302    END SUB
      1A1A  0302
50      21AF  0302

50426 Bytes Available
43373 Bytes Free

55      0 Warning Error(s)
      0 Severe Error(s)

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Reagent Jet Printer
Burr-Brown PCI-20000 custom driver

PAGE 1

06-30-86

08:38:16

```

Offset  Data  Source Line  IBM Personal Computer BASIC Compiler V2.00

5      0030  0006  REM $TITLE:'Reagent Jet Printer' $SUBTITLE:'Burr-Brown PCI-2000
      0030  0006  0 custom driver'
      0030  0006  *MODULE - *PCI* Driver for the PCI-20000 I/O and PULSE cards
10     0030  0006  *
      0030  0006  *AUTHOR - M. S. Fairchild of Computing Architects Inc.
      0030  0006  113 Fairfield Way
      0030  0006  Bloomingdale, IL 60108
      0030  0006  312/980-6777
      0030  0006  *
15     0030  0006  *COPYRIGHT (C) 1985 ABBOTT LABORATORIES
      0030  0006  *
      0030  0006  *REVISION - 1.2 12-16-85 MSF Add digital I/O initialization, and
      0030  0006  output routine
      0030  0006  *
20     0030  0006  * - 1.1 12-10-85 MSF Move counter module to position 2
      0030  0006  *
      0030  0006  * - 1.0 11-22-85 MSF Creation of initial code
      0030  0006  *
      0030  0006  *SYSTEM - This code can only be compiled by the BASCOM V2
25     0030  0006  * COMPILER, it will not run under the INTERPRETER!!
      0030  0006  *
      0030  0006  *DESCRIPTION:
      0030  0006  The PCI module is a group of routines used to a
30     0030  0006  ccess
      0030  0006  the BURR-Brown PCI-20000 board. The supplied software c
      0030  0006  auses
      0030  0006  the Wordstar2000 software to malfunction and will not p
      0030  0006  rvide
      0030  0006  explicit on, off functions for the counters. Custom dr
35     0030  0006  ivers
      0030  0006  will be added to provide all of the desired functions.
      0030  0006  *
      0030  0006  *
      0030  0006  *
      0030  0006  Address Register
40     0030  0006  * %HC0000 Carrier I.D. / module present (R)
      0030  0006  * %HC0040 Module interrupt status (R)
      0030  0006  * %HC0050 Digital I/O port 0 (R/W)
      0030  0006  * %HC0081 Digital I/O port 1 (R/W)
      0030  0006  * %HC0082 Buffer direction and enable (R/W)
45     0030  0006  * %HC0083 Control for ports 0 and 1 (W)
      0030  0006  * %HC00C0 Digital I/O port 2 (R/W)
      0030  0006  * %HC00C1 Digital I/O port 3 (R/W)
      0030  0006  * %HC00C3 Control for ports 2 and 3 (W)
      0030  0006  *
50     0030  0006  * %HC0200 Read module I.D. (1110 1010)
      0030  0006  * %HC0204 Rate generator low-order 16 bits (O)
      0030  0006  * %HC0205 Rate generator high-order 16 bits (I)
      0030  0006  * %HC0206 Counter 3 count register (2)
      0030  0006  * %HC0207 Rate generator/counter 3 control
      0030  0006  * %HC0208 Counter 0 count register (0)
55     0030  0006  * %HC0209 Counter 1 count register (1)
      0030  0006  * %HC020A Counter 2 count register (2)
      0030  0006  * %HC020B Counter 0 - 2 control
      0030  0006  * %HC020C Counter gate control (1 enables, 0 disa

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Reagent Jet Printer
Burr-Brown FCI-20000 custom driver

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Offset Data Source Line IBM Personal Computer BASIC Compiler V2.00

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      bles:
0030 0006 .          bit      function
0030 0006 .          0      Rate generator gate
0030 0006 .          1      Rate generator gate
0030 0006 .          2      Counter 0 gate
20 0030 0006 .          3      Counter 1 gate
0030 0006 .          4      Counter 2 gate
0030 0006 .          5      Counter 3 gate
0030 0006 .          6      Not used
0030 0006 .          7      Not used
25 0030 0006 .
0030 0006 .
0030 0006 . DATA DICTIONARY
0030 0006 .
0030 0006 .      COUNT - Divisor to 2Mhz rate to give desired frequen
30 0030 0006 .      COUNTHZ - High order 16 bits of a 32 bit diviso
      r
0030 0006 .      COUNTL - Low order 16 bits of a 32 bit divisor
0030 0006 .      LSBZ - Lower 8 bits of a 16 bit divisor
35 0030 0006 .      MSBZ - Upper 8 bits of a 16 bit divisor
0030 0006 .
0030 0006 . Main line code
0030 0006 .      The main line code is never executed. It's sole purpose
      it to
40 0030 0006 . declare shared the variables that will be used in the subrou
      ines
0030 0006 . so that they will all be defined and hold their values.
0030 0006 .
0030 0006 . MAIN:
45 0030 0006 .      DIM SHARED COUNT,COUNTHZ,COUNTL,LSBZ,MSBZ
0030 0006 .
0030 0006 . MAINLOOP:
0030 0006 .      GOTO MAINLOOP
004C 0012 .
50 004C 0012 . REM $PAGE

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Reagent Jet Printer
Burr-Brown FCI-20000 custom driver

PAGE 3
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Offset Data Source Line ISX Personal Computer BASIC Compiler V2.00

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6      004C 0012 'SUBROUTINE - PCI.INIT
      004C 0012
      004C 0012 'DESCRIPTION:
      004C 0012 ' The PCI.INIT subroutine initializes the PCI hardware.
10     004C 0012
      004C 0012 END PCI.INIT STATIC
      0053 0012
      0053 0012 DEF SEG = &H0000: 'Point segment to PCI-20000 board
      005A 0012
      005A 0012 POKE &H020C,&H03: 'Disable all software enabled counter
15
      0063 0012
      0063 0012 ' Configure rate generator to 2 Mhz
      0063 0012
      0063 0012 POKE &H0207,&H34: 'Set low rate counter to mode 2
20     006D 0012 POKE &H0207,&H74: 'Set high rate counter to mode 2
      0077 0012 POKE &H0204,&H02: 'Load low rate counter with 16 bits 0
      0077 0012
      0081 0012
      0081 0012 POKE &H0204,&H00
25     008A 0012 POKE &H0205,&H02: 'Load high rate counter with 16 bits
      008A 0012
      008A 0012 of 2
      0094 0012 POKE &H0205,&H00
      009D 0012 POKE &H020C,&H03: 'Enable rate counters
      00A7 0012
      00A7 0012 ' Configure dot rate counters (default to 5 KHz)
30     00A7 0012
      00A7 0012 POKE &H0209,&H34: 'Set low dot counter (0) to mode 2
      00B1 0012 POKE &H0209,&H74: 'Set high dot counter (1) to mode 2
      00B3 0012 POKE &H0208,&H04: 'Load low rate counter with 16 bits 0
35
      00C5 0012
      00C5 0012 POKE &H0208,&H00
      00CE 0012 POKE &H0209,&H64: 'Load high rate counter with 16 bits
      00CE 0012
      00CE 0012 of 100
      00D8 0012 POKE &H0209,&H00
40     00E1 0012
      00E1 0012 ' Configure dot pulse with one shot (default to 13 usec)
      00E1 0012
      00E1 0012 POKE &H020B,&H02: 'Set dot pulse with oneshot (2) to mo
45     00E1 0012
      00E1 0012 of 1
      00EB 0012 POKE &H020A,&H1A: 'Load oneshot with 16 bits of 26
      00F3 0012 POKE &H020A,&H00
      00FE 0012
      00FE 0012 ' Configure shifted strobe pulse one shot (default to .5 usec)
      00FE 0012
      00FE 0012 POKE &H0207,&H82: 'Set shifted strobe onshot (3) to mod
60     00FE 0012
      00FE 0012 of 1
      0108 0012 POKE &H020B,&H01: 'Load oneshot with 16 bits of 1
      0112 0012 POKE &H020B,&H00
      011B 0012
      011B 0012 ' Configure port 0 to output and port 1 to input
55     011B 0012
      011B 0012
      011B 0012 POKE &H0083,&H82: ' Set up I/O chip
      0125 0012 POKE &H0082,&H34: ' Set up direction and enable buffers
      012F 0012 POKE &H0080,&H00: ' Dissable print head

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M O N I T O R

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Reagent Jet Printer
Burr-Brown PCI-25000 custom driver

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Offset Data Source Line IEM Personal Computer BASIC Compiler V2.00

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0136 0012      END SUB
013F 0012
20 013F 0012  REM $PAGEIF:12
013F 0012  'SUBROUTINE - DOT.ON
013F 0012  '
013F 0012  'DESCRIPTION:
013F 0012  ' The DOT.ON subroutine enables the dot frequency counter
25 013F 0012  '
013F 0012  SUB DOT.ON STATIC
0146 0012
0146 0012      POKE &H020C,&H0F: 'Enable dot counters and rate generat
30 or
0150 0012
0150 0012      END SUB
0157 0012
0157 0012  REM $PAGEIF:12
35 0157 0012  'SUBROUTINE - DOT.OFF
0157 0012  '
0157 0012  'DESCRIPTION:
0157 0012  ' The DOT.OFF subroutine disables the dot counters
40 0157 0012
0157 0012  SUB DOT.OFF STATIC
015E 0012
015E 0012      POKE &H020C,&H03: 'Disable dot counters and enable rate
generator
45 0168 0012
0168 0012      END SUB
016F 0012
016F 0012  REM $PAGEIF:49

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Reagent Jet Printer
Burr-Brown PCI-20000 custom driver

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	Offset	Data	Source Line	IBM Personal Computer BASIC Compiler V2.00
5	016F	0012	*SUBROUTINE	- SET.DOT.RATE
	016F	0012	*	
10	016F	0012	*DESCRIPTION:	
	016F	0012	* The SET.DOT.RATE subroutine loads the dot rate counters	
	016F	0012	* with the desired dot frequency. Allowed range is 10,000 to 1	
			Hz.	
	016F	0012	* The FREQ parameter is a real number in Hz.	
15	016F	0012		
	016F	0012	SUB SET.DOT.RATE(FREQ) STATIC	
	0176	0012		
	0176	0012	* Limit frequency to in range	
	0176	0012		
20	0176	0012	IF FREQ < 1 THEN FREQ = 1	
	018F	0012	IF FREQ > 10000 THEN FREQ = 10000	
	01A8	0012		
	01A8	0012	* Convert to count and check for 16 bit count or 32 bit count	
	01A8	0012		
25	01A8	0012	COUNT = 2E6 / FREQ	
	01B8	0012	IF COUNT < 65536 THEN GOTO DIVIDE16 ELSE GOTO DIVIDE32	
	01CF	0012		
	01CF	0012	* Process count of 32 bits	
	01CF	0012		
30	01CF	0012	DIVIDE32:	
	01D0	0012	COUNTL1 = INT((COUNT/32768) + 1); 'Stage lower count	
	01F0	0012	COUNTH1 = INT(COUNT/COUNTL1); 'Form upper count	
	0208	0012	GOTO SET.COUNT	
	020F	0012		
35	020F	0012	* Process count of 16 bits	
	020F	0012		
	020F	0012	DIVIDE16:	
	0214	0012	COUNTL1 = 2	
	021B	0012	COUNTH1 = INT(COUNT/2)	
40	0232	0012	GOTO SET.COUNT	
	0236	0012		
	0236	0012	* Send the derived counts out to the counters	
	0236	0012		
	0236	0012	SET.COUNT:	
45	0237	0012	LSB1 = COUNTL1 MOD 256; ' Send out low 16 bits	
	0248	0012	MSB1 = INT(COUNTL1 / 256)	
	0263	0012	POKE &H0208,LSB1	
	0273	0012	POKE &H0208,MSB1	
	0283	0012		
50	0283	0012	LSB1 = COUNTH1 MOD 256; 'Send out high 16 bits	
	0291	0012	MSB1 = INT(COUNTH1 / 256)	
	02AC	0012	POKE &H0209,LSB1	
	02BC	0012	POKE &H0209,MSB1	
	02CC	0012		
55	02CC	0012	END SUB	
	02D3	0012		
	02D3	0012	REM \$PAGEIF:27	

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Reagent Jet Printer                                     PAGE 6
Burr-Brown FCI-20000 custom driver                     06-30-86
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                                                         IBM Personal Computer BASIC Compiler V2.00

Offset  Data  Source Line
02D3 0012 'SUBROUTINE - SET.DOT.WIDTH
02D3 0012 '
02D3 0012 'DESCRIPTION:
02D3 0012 ' The SET.DOT.WIDTH subroutine loads the dot width one sh
ot
02D3 0012 ' with the desired dot pulse width. Allowed range is .5 to 16,0
00 usec.
02D3 0012 ' The dwidth parameter is a real number in usec.
02D3 0012 SUB SET.DOT.WIDTH(DWIDTH) STATIC
02DA 0012 ' Limit width to in range
02DA 0012 IF DWIDTH < .5 THEN DWIDTH = .5
02F3 0012 IF DWIDTH > 16000 THEN DWIDTH = 16000
030C 0012 ' Convert to count
030C 0012 COUNT = DWIDTH / .5
031A 0012 ' Send the derived count out to the counter
031A 0012
031A 0012 LSBZ = INT(COUNT MOD 256): ' Send out 16 bits
0331 0012 MSBZ = INT(COUNT / 256)
0348 0012 POKE &H020A,LSBZ
0358 0012 POKE &H020A,MSBZ
0368 0012
0368 0012 END SUB
036F 0012
036F 0012 REM $PAGEIF:27

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Reagent Jet Printer
Burr-Brown PCI-20000 custom driver

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6      Offset Data   Source Line      IBM Personal Computer BASIC Compiler V2.00

      036F 0012 'SUBROUTINE - SET.STROBE.DELAY
      036F 0012 '
      036F 0012 'DESCRIPTION:
10     036F 0012 ' The SET.STROBE.DELAY subroutine loads the strobe delay
      036F 0012 ' one shot
      036F 0012 ' with the desired strobe delay time. Allowed range is .5 to 16
      036F 0012 ' ,000 usec.
      036F 0012 ' The delay parameter is a real number in usec.
15     036F 0012 SUB SET.STROBE.DELAY(DELAY) STATIC
      0376 0012
      0376 0012 ' Limit delay to in range
      0376 0012
20     0376 0012 IF DELAY < .5 THEN DELAY = .5
      038F 0012 IF DELAY > 16000 THEN DELAY = 16000
      03AB 0012
      03AB 0012 ' Convert to count
      03AB 0012
25     03AB 0012 COUNT = DELAY / .5
      03B6 0012
      03B6 0012 ' Send the derived count out to the counter
      03B6 0012
      03B6 0012 LSBZ = INT(COUNT MOD 256): ' Send out 16 bits
30     03CD 0012 MSBZ = INT(COUNT / 256)
      03E4 0012 POKE &H0206,LSBZ
      03F4 0012 POKE &H0206,MSBZ
      0404 0012
      0404 0012 END SUB
35     040B 0012
      040B 0012 REM $PAGEIF:16
      040B 0012 'SUBROUTINE - DIGITAL.OUT
      040B 0012 '
      040B 0012 'DESCRIPTION:
40     040B 0012 ' The DIGITAL.OUT subroutine sends the passed integer to
      040B 0012 ' the output
      040B 0012 ' port 0.
      040B 0012
      040B 0012 SUB DIGITAL.OUT(BYTEZ) STATIC
45     0412 0012
      0412 0012 ' Send the byte to the port
      0412 0012
      0412 0012 POKE &H0080,BYTEZ
      0423 0012
50     0423 0012 END SUB
      042A 0012
      057F 0012

```

50426 Bytes Available
48723 Bytes Free

0 Warning Error(s)
0 Severe Error(s)

Reagent Jet Printer
Pattern Printing

PAGE
09-1
08:4

IBM Personal Computer BASIC Compiler V

Offset	Data	Source Line
70	0030 0004	PER TITLE: 'Reagent Jet Printer' SUBTITLE: 'Pattern Printing' SLINKSIZE:122
	0030 0006	'MODULE' = 'PATTERN'
	0030 0008	'
	0030 000A	'AUTHOR' = M. A. Ensvold
	0030 000C	'
15	0030 000E	'COPYRIGHT (C) 1975 ANSOTT LABORATORIES
	0030 0010	'
	0030 0012	'REVISION' = 2.0 07-02-84 MAE Modified for MicroFab Printhead
	0030 0014	' - 1.1 03-07-84 MAE Added notes and final touches
	0030 0016	' - 1.0 02-03-84 MAE Creation of initial code
	0030 0018	'
	0030 001A	'
20	0030 001C	'SYSTEM' = This code can only be compiled by the BASCOM
	0030 001E	' COMPILER, it will not run under the INTERPRETER!!
	0030 0020	'
	0030 0022	'DESCRIPTION:
	0030 0024	' The printing module displays a menu in 3 columns of 4 rows each. The first
	0030 0026	' column has data from the default reagent profile. The second column has
25	0030 0028	' data from the default pattern file. The third column has standard printing
	0030 002A	' data. The four arrow keys allow different menu items to be highlighted and
	0030 002C	' the values can be changed with the + or - keys or by entering the new number
	0030 002E	' followed by Enter. P will cause the pattern to be printed, S will select the
	0030 0030	' notepad, and E will exit to the main program. On the notepad, any single line
	0030 0032	' entered here will be sent to the printer. A null line exits the notepad.
30	0030 0034	'
	0030 0036	'DATA DICTIONARY
	0030 0038	' MENU Which menu item is highlighted (0-17)
	0030 003A	' DIFF Where to save menu highlight in response to arrow key
	0030 003C	' TYPE What key has been pressed during main scan
35	0030 003E	' ELEMENT Number of elements in current pattern
	0030 0040	' SELECTED(10,5) Array for storing elements in current pattern
	0030 0042	' REPEAT Counter for repeat printing the pattern
	0030 0044	' CTL Counter for stepping through the pattern array during printing
	0030 0046	' RADIUSZ Radius of circle during printing
	0030 0048	' TX TX Offsets for start row/column position
40	0030 004A	' REPEAT REPEAT Repeat distances for repeat printing of patterns
	0030 004C	' STX STX Starting X and Y positions for solid rectangles
	0030 004E	' ETX ETX Ending X and Y positions for solid rectangles
	0030 0050	' IX IX Counters used for reading pattern files into the array
	0030 0052	' TEMP Register for misc. integers
	0030 0054	' MOTELINEZ Pointer to which line is active in the notepad
45	0030 0056	' MENUSTR(17,1) Array of strings used to display menu items
	0030 0058	' AX Single teletype input destination
	0030 005A	' NOTES String entered in notepad and sent to printer
	0030 005C	' SETSTOPS String entered from main scan and assigned to number of string field
	0030 005E	' REAGNAME Name of default reagent
	0030 0060	' PATTERN Name of default pattern
50	0030 0062	' FILE Name of reagent data file and then pattern data file
	0030 0064	' MENU(11,4) Array of values used in displaying menu item numbers
	0030 0066	' TEMP Register for the temporary storage of real numbers
	0030 0068	'
	0030 006A	'
	0030 006C	'
	0030 006E	'
	0030 0070	'
	0030 0072	'
	0030 0074	'
	0030 0076	'
	0030 0078	'
	0030 007A	'
	0030 007C	'
	0030 007E	'
	0030 0080	'
	0030 0082	'
	0030 0084	'
	0030 0086	'
	0030 0088	'
	0030 008A	'
	0030 008C	'
	0030 008E	'
	0030 0090	'
	0030 0092	'
	0030 0094	'
	0030 0096	'
	0030 0098	'
	0030 009A	'
	0030 009C	'
	0030 009E	'
	0030 00A0	'
	0030 00A2	'
	0030 00A4	'
	0030 00A6	'
	0030 00A8	'
	0030 00AA	'
	0030 00AC	'
	0030 00AE	'
	0030 00B0	'
	0030 00B2	'
	0030 00B4	'
	0030 00B6	'
	0030 00B8	'
	0030 00BA	'
	0030 00BC	'
	0030 00BE	'
	0030 00C0	'
	0030 00C2	'
	0030 00C4	'
	0030 00C6	'
	0030 00C8	'
	0030 00CA	'
	0030 00CC	'
	0030 00CE	'
	0030 00D0	'
	0030 00D2	'
	0030 00D4	'
	0030 00D6	'

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Offset	Data	Source Line
0030	0004	SUB PATPRINT STATIC
0047	0004	
0047	0004	BIN SENDATA(50,5),MENU(17,1),MENU(17,4)
0048	0462	
0048	0462	SSUB INITIALIZE: 'read init. values and set screens
004E	0462	
004E	0462	WHILE TYPE1 < 1
0059	0464	
0059	0464	TYPE1 = 0
0060	0464	AS = ""
006A	0468	
006A	0468	WHILE AS = ""
0079	0468	AS = INKEY\$
0083	0468	WEND
008A	0468	
008A	0468	IF AS = "E" OR AS = "e" THEN TYPE1 = 1: 'exit sub
0092	0468	IF AS = "P" OR AS = "p" THEN TYPE1 = 2: 'print pattern
009E	0468	IF AS = "+" THEN TYPE1 = 3: 'increment variable
00F4	0468	IF AS = "-" THEN TYPE1 = 4: 'decrement variable
010A	0468	IF AS = CHR\$(0) + CHR\$(72) THEN TYPE1 = 5: 'up arrow key
012F	0468	IF AS = CHR\$(0) + CHR\$(80) THEN TYPE1 = 6: 'down arrow key
0154	0468	IF AS = CHR\$(0) + CHR\$(75) THEN TYPE1 = 7: 'left arrow key
0179	0468	IF AS = CHR\$(0) + CHR\$(77) THEN TYPE1 = 8: 'right arrow key
019E	0468	IF AS > CHR\$(47) AND AS < CHR\$(58) THEN TYPE1 = 9: 'number 0-9
01D6	0468	IF AS = "5" OR AS = "s" THEN TYPE1 = 10: 'enter scratchpad
0202	0468	
0202	0468	ON TYPE1 GOSUB T1, T2, T3, T4, T5, T6, T7, T8, T9, T10
021F	0468	
021F	0468	WEND
0223	0468	TYPE1 = 0
022A	0468	
022A	0468	EXIT SUB
022E	0468	
022E	0468	***** SUBROUTINES FOR THIS MODULE *****
022E	0468	T10: 'scratch pad
0233	0468	SCREEN 0,0,3,2,COLOR 7,0
0256	0468	LOCATE NOTELINE1,1
0261	046A	NOTELCOP:
0261	046A	LINE INPUT NOTES
0277	046E	IF NOTES = "" THEN SCREEN 0,0,0,0:RETURN
029F	046E	LPRINT NOTES
02AC	046E	IF NOTELINE1 < 24 THEN NOTELINE1 = NOTELINE1 + 1
02C0	046E	GOTO NOTELCOP
02C3	046E	
02C3	046E	
02C3	046E	T1:
02C8	046E	RETURN: 'exit to print menu, no action
02CC	046E	
02CC	046E	T3:
02D1	046E	'process "+" key
02D1	046E	IF MENU(MENU1,0) > MENU(MENU1,1) THEN MENU(MENU1,0) = MENU(MENU1,1):RETURN: 'check max value
031C	0470	MENU(MENU1,0) = MENU(MENU1,0) + MENU(MENU1,3): 'add increment
0372	0470	COLOR 0,7:GOSUB DISPMENU:RETURN: 'show new value
0388	0470	
0388	0470	
0388	0470	T4:
0388	0470	'process "-" key

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10 032C 0470 IF MENU(MENU,0) (= MENU(MENU,2)) THEN MENU(MENU,0) = MENU(MENU,2):RETURN: 'check old value
032F 0470 MENU(MENU,0) = MENU(MENU,0) - MENU(MENU,3): 'sub increment
042E 0470 COLOR 0,7:GOSUB DISPMENU:RETURN: 'show new value
0444 0470
0444 0470 T5: 'process up arrow key
0449 0470 IF MENU MOD 6 = 0 THEN RETURN: 'in top row already
045E 0470 DIFFX = -1:GOSUB NEVMENU:RETURN: 'move pointer up one
15 046F 0472
046F 0472 T6: 'process down arrow key
0474 0472 IF MENU MOD 6 = 5 THEN RETURN: 'in bottom row already
0481 0472 DIFFX = 1:GOSUB NEVMENU:RETURN: 'move pointer down one
049B 0472
20 049B 0472 T7: 'process left arrow key
04A0 0472 IF INT(MENU / 6) = 0 THEN RETURN: 'in left column already
04C0 0472 DIFFY = -6:GOSUB NEVMENU:RETURN: 'move pointer one left
04D1 0472
04D1 0472 T8: 'process right arrow key
04D6 0472 IF INT(MENU / 6) = 2 THEN RETURN: 'in right column already
25 04F9 0472 DIFFY = 6:GOSUB NEVMENU:RETURN: 'move pointer one right
050A 0472
050A 0472 T9: 'input keys into KEYBUFs until (cr) is entered
050F 0472 LOCATE 25,30:COLOR 31,3:PRINT "ENTER NEW VALUE";:COLOR 15,0
0541 0472 KEYBUFs = ""
054B 0472 WHILE AS <> CHR\$(13)
30 055E 0472 LOCATE 25,47:PRINT SPACES(20);
057B 0472 LOCATE 25,47:PRINT KEYBUFs;
0595 0472 AS = ""
059F 0472 WHILE AS = ""
05AE 0472 AS = INKEY\$
05B8 0472
35 05B8 0472 NEXT
05F0 0472 IF AS = CHR\$(8) AND LEN(KEYBUFs) > 0 THEN KEYBUFs = LEFT\$(KEYBUFs,LEN(KEYBUFs)-1)
05F0 0472 IF AS > CHR\$(13) THEN KEYBUFs = KEYBUFs + AS
061E 0472 NEXT
0622 0472 TEMP = VAL(KEYBUFs) 'temp has value of keys input
0632 047A
0632 047A
40 0632 047A 'round off temp according to step size in menu array
0643 047A TEMP = INT(TEMP / (MENU(MENU,3) + .5) + MENU(MENU,3))
0643 047A
0643 047A 'test TEMP for maximum and minimum values in menu array
0643 047A IF TEMP > MENU(MENU,1) THEN TEMP = MENU(MENU,1)
0644 047A IF TEMP < MENU(MENU,2) THEN TEMP = MENU(MENU,2)
45 064E 047A
064E 047A 'insert new value into menu array and update screen
064E 047A MENU(MENU,0) = TEMP
0705 047A LOCATE 25,30:PRINT SPACES(40);
0722 047A COLOR 0,7:GOSUB DISPMENU
0734 047A RETURN
50 0738 047A T2: 'set Burr-Brown board then print desired pattern
073D 047A
073D 047A BEEP:COLOR 15,0:LOCATE 25,1
073A 047A PRINT "Set Potentiometers on Printer....then Press any Key";
0767 047A AS = ""
55 0771 047A WHILE AS = ""

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	0780 047A	AS = INDEX
70	078A 047A	MEMO
	0780 047A	LOCATE 25,1:PRINT SPACE(79);
	078A 047A	
	078A 047A	'enter drop parameters into Burr-Brown board
	078A 047A	TEMP = MEMU(0,0):CALL SET.DOT.RATE(TEMP)
	0783 047A	TEMP = 3:CALL SET.DOT.WIDTH(TEMP)
75	078D 047A	TEMP = MEMU(2,0):CALL SET.STROBE.DELAY(TEMP)
	0819 047A	CALL DOT.ON
	0825 047A	
	0825 047A	TEMP1 = 4
	082C 047C	CALL DIGITAL.OUT(TEMP1)
20	083C 047C	TEMP1 = 0: 'pulse RESET line
	0843 047C	CALL DIGITAL.OUT(TEMP1)
	0823 047C	TEMP1 = 4
	085A 047C	CALL DIGITAL.OUT(TEMP1)
	086A 047C	
	086A 047C	J1 = CINT(MEMU(1,0) * 255 / 150): 'set pulse amplitude by pulsing HIGHER signal J1 number of times
25	0893 047E	FOR I1 = 1 TO J1
	08A0 0480	TEMP1 = 4: 'set HIGHER true
	08A7 0480	CALL DIGITAL.OUT(TEMP1)
	08B7 0480	TEMP1 = 4: 'set HIGHER false
	08BE 0480	CALL DIGITAL.OUT(TEMP1)
	08CE 0480	NEXT I1
30	08E0 0482	
	08E0 0482	'establish COM1 and initialize plotter
	08E0 0482	OPEN "COM1:2400,N,8,2,CS 65535" AS #1
	08F2 0482	PRINT #1,";DECS,EFVL,N");
	0902 0482	
	0902 0482	'move nozzle offset and establish new origin
35	0902 0482	PRINT #1,"AO";
	0912 0482	
	0912 0482	'calculate row/column location, save there, and set new origin
	0912 0482	IX = (MEMU(12,0)-1) * (MEMU(14,0) / 0.005)
	0954 0484	YI = (MEMU(13,0)-1) * (MEMU(15,0) / 0.005)
	0996 0486	PRINT #1,IX;YI;"O";
40	09B4 0486	
	09B4 0486	'print the pattern using repeat count
	09B4 0486	REPLYI = MEMU(18,0) / 0.005
	09D7 0488	REPLYI = MEMU(19,0) / 0.005
	09FA 048A	
	09FA 048A	FOR REPEATI = 0 TO MEMU(17,0)
45	0A1C 048C	
	0A1C 048C	'print the pattern
	0A1C 048C	FOR CTI = 0 TO ELNUMI - 1
	0A2A 0490	ON SCNDATI(CTI,0) GOSUB PLINE, PSEET, PSREET, PCIRCL
	0A4C 0492	NEXT CTI
	0A5E 0492	
50	0A5E 0492	PRINT #1,"A,O,O,"; 'return to origin
	0A6E 0492	PRINT #1,REPLYI;REPLYI;"O"; 'move to next pattern
	0A9C 0492	NEXT REPEATI
	0AA1 0494	
	0AA1 0494	PRINT #1,"H"; 'return plotter to original HOME
55	0AB1 0494	

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	Offset	Data	Source Line
	0A81	0494	CLOSE #1: "disable coils"
10	0A88	0494	
	0A8B	0494	RETURN
	0A8C	0494	
	0A8C	0494	PLINE:
	0AC1	0494	PRINT #1,SENDATZ(CTL,2);SENDATZ(CTL,1);"D";
	0B03	0494	PRINT #1,SENDATZ(CTL,4);SENDATZ(CTL,3);"U";
15	0B45	0494	RETURN
	0B49	0494	
	0B49	0494	PRECT:
	0B4E	0494	PRINT #1,SENDATZ(CTL,2);SENDATZ(CTL,1);"D";
	0B90	0494	PRINT #1,SENDATZ(CTL,4);SENDATZ(CTL,3);
	0BCC	0494	PRINT #1,SENDATZ(CTL,4);SENDATZ(CTL,3);
20	0C08	0494	PRINT #1,SENDATZ(CTL,2);SENDATZ(CTL,3);
	0C14	0494	PRINT #1,SENDATZ(CTL,2);SENDATZ(CTL,1);"U";
	0C84	0494	RETURN
	0C8A	0494	
	0C8A	0494	PCIRCL:
	0C8F	0494	RADIUSZ = SQR((SENDATZ(CTL,3)-SENDATZ(CTL,1)) ² + (SENDATZ(CTL,4)-SENDATZ(CTL,2)) ²)
25	0D1A	0494	PRINT #1,"CC ";SENDATZ(CTL,2);SENDATZ(CTL,1);RADIUSZ;
	0D63	0494	RETURN
	0D67	0494	
	0D67	0494	PSRECT:
	0D6C	0494	SIZ = SENDATZ(CTL,1);EIZ = SENDATZ(CTL,2)
	0DA0	0494	SYZ = SENDATZ(CTL,3);EYZ = SENDATZ(CTL,4)
30	0DD4	0494	IF EIZ <= SIZ THEN SIZ = SENDATZ(CTL,2);EIZ = SENDATZ(CTL,4)
	0E15	0494	IF EYZ <= SYZ THEN SYZ = SENDATZ(CTL,1);EYZ = SENDATZ(CTL,3)
	0E36	0494	
	0E36	0494	PRINT #1,SIZ;SYZ;"D";
	0E74	0494	
35	0E74	0494	IF EIZ - SIZ >= EYZ - SYZ THEN GOSUB STEP1 ELSE GOSUB STEP1
	0E9D	0494	
	0E9D	0494	PRINT #1,"U";
	0EAD	0494	RETURN
	0EB1	0494	
	0EB1	0494	STEP1:
40	0EB6	0494	PRINT #1,EIZ;SYZ;
	0ECE	0494	SYZ = SYZ + 1
	0ED7	0494	IF SYZ > EYZ THEN RETURN
	0CED	0494	PRINT #1,EIZ;SYZ;SIZ;SYZ;
	0F0E	0494	SYZ = SYZ + 1
	0F17	0494	IF SYZ > EYZ THEN RETURN
45	0F28	0494	PRINT #1,SIZ;SYZ;
	0F40	0494	GOTO STEP1
	0F44	0494	
	0F44	0494	STEP2:
	0F49	0494	PRINT #1,SIZ;EYZ;
	0F61	0494	SIZ = SIZ + 1
50	0F6A	0494	IF SIZ > EIZ THEN RETURN
	0F78	0494	PRINT #1,SIZ;EYZ;SIZ;SYZ;
	0FA1	0494	SIZ = SIZ + 1
	0FAA	0494	IF SIZ > EIZ THEN RETURN
	0FB8	0494	PRINT #1,SIZ;SYZ;
55	0FB3	0494	GOTO STEP1

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Offset	Data	Source Line
0FD7	049E	
10	0FD7	KEYMENU: 'write old item in yellow, point to and highlight new item
	0FDC	COLOR 14,0:GOSUB DISPMENU
	0FEE	MENU1 = MENU1 + DIFF1
	0FFA	IF MENU1 = 10 THEN MENU1 = 9
	100C	IF MENU1 = 11 THEN MENU1 = 9
	101E	IF MENU1 > 15 THEN MENU1 = 15
15	1030	COLOR 0,7:GOSUB DISPMENU:RETURN
	1046	
	1046	INITIALIZE:
	1048	'change to screen 0 and display messages
	1048	SCREEN 0,0,1:COLOR 7,0:CLS:LOCATE 10,17:PRINT "Loading selected Reagent and Pattern Data Files";
	108F	LOCATE 12,33:PRINT "Please Wait..."
20	10A9	
	10A9	'initialize notepad on screen 2
	10A9	SCREEN 0,0,2,1:CLS:COLOR 15
	10CE	PRINT "Digital Notepad - - All information typed here is sent to the printer"
	10DB	NOTELINES = 3
	10E2	
25	10E2	'initialize menu arrays
	10E2	RESTORE ARRDATA
	10E9	FOR I=0 TO 17
	10EF	READ MENU(11,0),MENU(11,1):
	111F	READ MENU(11,1),MENU(11,2),MENU(11,3),MENU(11,4)
30	1180	NEXT I
	1193	
	1193	'get default reagent file and read values
	1193	
	1193	OPEN "REAGEF.RJP" FOR INPUT AS #1
	11A4	INPUT #1,FILES
35	11B6	INPUT #1,REAXAMES
	11C8	CLOSE #1
	11CF	
	11CF	OPEN FILES FOR INPUT AS #1: 'get reagent data
	11E0	INPUT #1,MENU(0,0): 'frequency
	1200	INPUT #1,MENU(1,0): 'amplitude
40	1223	INPUT #1,MENU(2,0): 'strobe delay
	1246	INPUT #1,MENU(3,0): 'pulse width
	1269	INPUT #1,MENU(4,0): 'rise time
	128C	INPUT #1,MENU(5,0): 'fall time
	12B1	CLOSE #1
	12B8	
45	12B8	'get default pattern file and read values
	12B8	
	12B8	OPEN "PATDEF.RJP" FOR INPUT AS #1
	12C9	INPUT #1,FILES
	12DB	INPUT #1,PATXAMES
	12ED	CLOSE #1
50	12F4	
	12F4	OPEN FILES FOR INPUT AS #1: 'get pattern data
	1305	INPUT #1,ELXNUM
	1317	INPUT #1,MENU(6,0): 'grid
	132A	INPUT #1,MENU(7,0): 'repeat count
	133D	INPUT #1,MENU(8,0): 'x offset
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Offset	Data	Source Line
1330	04AA	INPUT #1, MENU(1,0): 'y offset
1333	04AA	FOR I1 = 0 TO ELEMEN-1
1334	04AC	FOR J1 = 0 TO 5
1337	04AC	INPUT #1, SCDATZ(I1,J1)
1338	04AC	NEXT J1
1339	04AC	NEXT I1
1339	04AC	CLOSE #1
15	1404	1404 04AC 'set remaining parameters in menu array
1404	04AC	1404 04AC MENU(12,0) = 1: 'row 1
1404	04AC	1404 04AC MENU(13,0) = 1: 'column 1
1426	04AC	1426 04AC MENU(14,0) = 0: 'row spacing
143C	04AC	143C 04AC MENU(15,0) = 0: 'column spacing
1458	04AC	1458 04AC 'change active displayed screen to screen 0 to draw and display parameters
1474	04AC	1474 04AC SCREEN 0,0,0,1:CLS
1474	04AC	1474 04AC
1474	04AC	1474 04AC
1491	04AC	1491 04AC COLOR 13:LOCATE 1,32:PRINT "REAGENT PRINTING";
1491	04AC	1491 04AC COLOR 9
1492	04AC	1492 04AC FOR I=2 TO 79
1499	04AC	1499 04AC LOCATE 3,1:PRINT CHR\$(176);LOCATE 5,1:PRINT CHR\$(205);LOCATE 18,1:PRINT CHR\$(176);
14C3	04AC	14C3 04AC NEXT I
1523	04B0	1523 04B0 FOR I=4 TO 17
153E	04B0	153E 04B0 LOCATE 1,1:PRINT CHR\$(179);LOCATE 1,28:PRINT CHR\$(184);LOCATE 1,54:PRINT CHR\$(186);LOCATE 1,5
1548	04B0	1548 04B0 PRINT CHR\$(179);
15C8	04B0	15C8 04B0 NEXT I
15E6	04B0	15E6 04B0 RESTORE TABLE
15ED	04B0	15ED 04B0 FOR I=1 TO 12
15F7	04B0	15F7 04B0 READ RI,C1,N1:LOCATE RI,C1:PRINT CHR\$(N1);
162A	04B6	162A 04B6 NEXT I
1645	04B6	1645 04B6 'display 16 menu choices in yellow
1645	04B6	1645 04B6
1645	04B6	1645 04B6
1645	04B6	1645 04B6 COLOR 14,0
1651	04B6	1651 04B6 FOR MENU1 = 0 TO 15
1657	04B6	1657 04B6 GOSUB DISPMENU
165D	04B6	165D 04B6 NEXT MENU1
166D	04B6	166D 04B6 'set for first menu entry and highlight it
166D	04B6	166D 04B6 MENU1 = 0:COLOR 0,7
1680	04B6	1680 04B6 GOSUB DISPMENU
1686	04B6	1686 04B6 'print three headings and instructions
1686	04B6	1686 04B6 COLOR 10,0
1692	04B6	1692 04B6 LOCATE 4,14.5-LEN(REAHEADER)/2:PRINT REAHEADER;
16C1	04B6	16C1 04B6 LOCATE 4,41-LEN(PATHHEADER)/2:PRINT PATHHEADER;
16F0	04B6	16F0 04B6 LOCATE 4,60:PRINT "PRINT LOCATION";
170A	04B6	170A 04B6
170A	04B6	170A 04B6 COLOR 7:LOCATE 19,20:PRINT "Use ";COLOR 15:PRINT CHR\$(27);CHR\$(32);CHR\$(26);
1754	04B6	1754 04B6 PRINT CHR\$(37);CHR\$(24);CHR\$(32);CHR\$(25);COLOR 7:PRINT " to position highlighted cursor";
1793	04B6	1793 04B6 LOCATE 20,18:PRINT "Use ";COLOR 15:PRINT "*";COLOR 7:PRINT " or ";COLOR 15:PRINT "-";
17E9	04B6	17E9 04B6 COLOR 7:PRINT " to scroll current value up or down";

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IBM Personal Computer BASIC Console V2.

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25 17FD 0486 LOCATE 21,5:PRINT "Use ";COLOR 15:PRINT "P";COLOR 7:PRINT " to print pattern or ";
    183F 0486 COLOR 15:PRINT "E";COLOR 7:PRINT " to exit to print menu";
    1867 0486 PRINT " or ";COLOR 15:PRINT "S";COLOR 7:PRINT " to use notepad";
    189C 0486
    189C 0486 "set screen to view menu just created and exit
30 189C 0486 SCREEN 0,0,0,0
    18B1 0486 RETURN
    18B5 0486
    18B5 0486 DISP MENU;
    18BA 0486 IF MENU = 10 OR MENU = 11 THEN RETURN
    18CE 0486 LOCATE (MENU MOD 6)+2+7,(INT(MENU/6)+28+2)-2+INT(MENU/12)
35 1938 0486 PRINT MENU;(MENU,0)
    1956 0486 LOCATE (MENU MOD 6)+2+7,MENU(MENU,4)
    196B 0486 PRINT USING MENU;(MENU,1);MENU(MENU,0);
    198D 0486 RETURN
    198F 0486 REM SPACE

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150F 04B6 ***** DATA USED BY THIS MODULE *****
150F 04B6
15 150F 04B6 AFDATA:
150F 04B6 DATA "Dot Frequency" Hz,"0.001",10000.1,1,16
150F 04B6 DATA "Amplitude" V,"0.001",150.0,1,19
150F 04B6 DATA "Stroke Delay" ms,"0.001",15199.5,.5,.5,16
150F 04B6 DATA "Pulse Width" ,"0.001",999.0,1,19
150F 04B6 DATA "Rise Time" ,"0.001",999.0,1,19
20 150F 04B6 DATA "Fall Time" ,"0.001",999.0,1,19
150F 04B6 DATA "Grid Size" in,"0.001",.005,.005,.005,45
150F 04B6 DATA "Repeat Count" ,"0.001",99.0,1,17
150F 04B6 DATA "X Axis Offset" in,"0.001",2.0,.005,45
150F 04B6 DATA "Y Axis Offset" in,"0.001",2.0,.005,45
150F 04B6 DATA "X",0,0,0,0
25 150F 04B6 DATA "X",0,0,0,0
150F 04B6 DATA "Row to Print" ,"0.001",99.1,1,74
150F 04B6 DATA "Column to Print" ,"0.001",99.1,1,74
150F 04B6 DATA "Row Spacing" in,"0.001",3.0,.005,72
150F 04B6 DATA "Column Spacing" in,"0.001",3.0,.005,72
30 150F 04B6 DATA "X",0,0,0,0
150F 04B6 DATA "X",0,0,0,0
150F 04B6
150F 04B6 TABLE:
150F 04B6 DATA 3,1,218
150F 04B6 DATA 3,28,210
35 150F 04B6 DATA 3,54,210
150F 04B6 DATA 3,80,191
150F 04B6 DATA 5,1,198
150F 04B6 DATA 5,28,206
150F 04B6 DATA 5,54,206
150F 04B6 DATA 5,80,181
40 150F 04B6 DATA 18,1,192
150F 04B6 DATA 18,28,208
150F 04B6 DATA 18,54,208
150F 04B6 DATA 18,80,217
150F 04B6
150F 04B6 END SUB
45 150F 04B6
150F 04B6
204F 04B6

```

50426 Bytes Available
44716 Bytes Free

50

0 Warning Error(s)
0 Severe Error(s)

55

Reagent Jet Printer
Reagent Filing

PAGE 1
07-09-86
15:04:35

Offset: Data Source Line IBM Personal Computer BASIC Compiler V2.00

```

5      0030 0006 *EX TITLE: 'Reagent Jet Printer' $SUBTITLE: 'Reagent Filing'
      0030 0006 *MODULE - 'RE4FILE' File Handling for reagents
      0030 0006
      0030 0006 *AUTHOR - M. A. Enevold
10     0030 0006
      0030 0006 *COPYRIGHT (C) 1985 ABBOTT LABORATORIES
      0030 0006
      0030 0006 *REVISION - 1.1 03-07-86 KAE Added notes and description
      0030 0006 *          1.0 02-14-86 KAE Creation of initial code
15     0030 0006
      0030 0006 *SYSTEM - This code can only be compiled by the BASCOM
      0030 0006 *          COMPILER, it will not run under the INTERPRETER!!
      0030 0006
      0030 0006 *DESCRIPTION:
20     0030 0006 *          This module allow file handling for reagents. When inv
      0030 0006 *          oted, it displays
      0030 0006 *          the current contents of the reagent directory in 4 colu
      0030 0006 *          ans of 20 entries
      0030 0006 *          each. The reagent which is currently selected for prin
25     0030 0006 *          ting is marked by
      0030 0006 *          an asterisk to the left of the reagent name. After the
      0030 0006 *          directory is listed
      0030 0006 *          the user is presented with 5 menu choices. The left an
30     0030 0006 *          d right arrows are
      0030 0006 *          used to highlight menu items and the enter key is used
      0030 0006 *          to invoke action.
      0030 0006 *          The menu choices and their actions are:
      0030 0006
      0030 0006 *          DELETE - Remove a reagent file from the directo
35     0030 0006 *          ry
      0030 0006 *          COPY - Copy a reagent file to a new reagent n
      0030 0006 *          ame, saving the old reagent
      0030 0006 *          RENAME - Change the name of the reagent without
40     0030 0006 *          changing the reagent itself
      0030 0006 *          SELECT - Select a reagent for printing
      0030 0006 *          EXIT - Return to the main menu
      0030 0006
      0030 0006 *DATA DICTIONARY
      0030 0006 *          TYPEX Which type of valid key was pushed
45     0030 0006 *          MENUZ Which menu item is being pointer to (0-4)
      0030 0006 *          DIFFL Distance to move MENUZ at left or right arro
      0030 0006 *
      0030 0006 *          FLAGZ Error type 0-4
      0030 0006 *          POINTERZ Position of REANAMES in directory list
50     0030 0006 *          REANUMZ Number of reagent names in directory
      0030 0006 *          list
      0030 0006 *          TEMPZ Storage for integers during reagent copy
      0030 0006 *          AS Misc. input string
      0030 0006 *          FUNCTS Printed at bottom of screen during prompt fo
55     0030 0006 *          r reagent name
      0030 0006 *          REANAMEZ Reagent name currently being worked on
      0030 0006 *          SELNAMEZ Reagent name currently selected for printing
      0030 0006 *          FILEZ Filename of reagent data file
      0030 0006 *          SFILEZ Filename for source reagent data file used d

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Reagent Jet Printer PAGE 2
Reagent Filing 07-09-86
15:04:35
IBM Personal Computer BASIC Compiler V2.00

Offset	Data	Source Line
0030	0006	using copy
0030	0006	FILES Filenase for destination reagent data file u
0030	0006	ses during copy
0030	0006	NEWNAME: New reagent name for COPY and RENAME
0030	0006	TEMP: Reagent names are held here as the directory
0030	0006	is being re-written
0030	0006	NEWFILES: Destination filenase used while copying reagent data files
0030	0006	MESSAGE: A message printed at the bottom of the screen
0030	0006	MENU(1,1) Array of strings containing the short and long menu names
0030	0006	ERRMSG: Message printed when any error occurs
0030	0006	ERR: Appended to ERRMSG to indicate nature of error
0030	0006	REM SPAGE

Reagent Jet Printer PAGE 3
Reagent Filing 07-09-86
15:04:35
IBM Personal Computer BASIC Compiler V2.00

Offset	Data	Source Line
0030	0006	SUB REAGENT.FILE STATIC
0047	0006	GOSUB INITIALIZE
0040	0006	TYPE1 = 0
0054	0008	WHILE TYPE1 < 3
005F	0008	AS = ""
0069	000C	WHILE AS = ""
0078	000C	AS = INKEYS
0082	000C	WEND
0085	000C	IF AS = CHR\$(0) + CHR\$(75) THEN TYPE1 = 1:
00AA	000C	IF AS = CHR\$(0) + CHR\$(77) THEN TYPE1 = 2:
00CF	000C	IF AS = CHR\$(13) THEN TYPE1 = 3:
00E9	000C	'left arrow
00E9	000C	'right arrow
00E9	000C	IF AS = CHR\$(13) THEN TYPE1 = 3:
00E9	000C	'(cr) to execute selection
00F8	000C	ON TYPE1 GOSUB T1, T2, T3
00FC	000C	WEND
00FC	000C	EXIT SUB
0100	000C	REM SPAGE

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Reagent Jet Printer
Reagent Filling

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Offset Data Source Line IEN Personal Computer BASIC Compiler V2.00

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0100 000C ***** SUB-ROUTINES FOR THIS MODULE *****
0100 000C
0100 000C T1:      'left arrow
0105 000C      TYPE1 = 0
010C 000C      IF MENUZ = 0 THEN RETURN
011B 000E      DIFF1 = -1
0122 0010      GOSUB NEW.MENU
012B 0010      RETURN
012C 0010
012C 0010 T2:      'right arrow
0131 0010      TYPE1 = 0
013B 0010      IF MENUZ = 4 THEN RETURN
0147 0010      DIFF1 = 1
014E 0010      GOSUB NEW.MENU
0154 0010      RETURN
015B 0010
015B 0010 T3:      '(cr) (execute selected menu item)
015D 0010      LOCATE 25,1:PRINT SPACES(79);
017A 0010      ON MENUZ + 1 GOSUB T3A, T3B, T3C, T3D, T3E
018F 0010      GOSUB MENU.ON
0195 0010      RETURN
0199 0010
0199 0010      REM $PAGE

```

0 268 237

Reagent Jet Printer
Reagent Filing

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IBM Personal Computer BASIC Compiler V2.00

```

5      Offset Data Source Line
      0199 0010 TJA: 'delete reagent
      019E 0010 TYPEI = 0
      01A5 0010 FUNCTS = "Delete"
      01AF 0014 GOSUB GET.SOURCE
10     01B5 0014 IF LEN(REANAME$) = 0 THEN RETURN
      01C7 0018 IF REANAME$ = SELNAME$ THEN FLAGI = 4:GOSUB SHOW.ERRDR:
      RETURN
      01E7 001E GOSUB SEARCH
      01ED 001E IF POINTERI = 0 THEN FLAGI = 1:GOSUB SHOW.ERROR:RETURN
15     0209 0020
      0209 0020 MESSAGE$ = "Deleting " + REANAME$ + " Please Wait..
      0220 0024 GOSUB MESSAGE.ON
      0226 0024
20     0226 0024 'rewrite directory deleting REANAME$ as indicat
      ed by POINTERI
      0226 0024 KILL "READIR.OLD"
      022D 0024 NAME "READIR.RJP" AS "READIR.OLD"
      0237 0024 OPEN "READIR.OLD" FOR INPUT AS #1
25     024B 0024 OPEN "READIR.RJP" FOR OUTPUT AS #2
      025A 0024
      025A 0024 INPUT #1, REANUMI
      026C 0026 REANUMI = REANUMI - 1
      0275 0026 WRITE #2,REANUMI
30     0286 0026
      0286 0026 IF REANUMI = 0 THEN GOTO DIR.DONE
      0295 0026 FOR I = 1 TO REANUMI + 1
      02A4 0028 INPUT #1,REANAME$
      02B6 0028 IF I <> POINTERI THEN PRINT #2,REANAME$
35     02D3 002A NEXT I
      02E5 002A
      02E5 002A DIR.DONE:
      02EA 002A CLOSE #1:CLOSE #2
      02FB 002A
40     02FB 002A 'remove data file
      02FB 002A FILE$ = RIGHT$(STR$(POINTERI),LEN(STR$(POINTERI))-1) +
      "REA.RJP"
      031C 002E KILL FILE$
      0323 002E
45     0323 002E 'rename remaining data files to maintain linked
      list to directory
      0323 002E WHILE (REANUMI + 1) > POINTERI
      0333 002E SFILE$ = RIGHT$(STR$(POINTERI+1),LEN(STR$(POINT
      ERI+1))-1) + "REA.RJP"
50     0359 0032 DFILE$ = RIGHT$(STR$(POINTERI),LEN(STR$(POINTER
      I))-1) + "REA.RJP"
      037D 0036 NAME SFILE$ AS DFILE$
      0387 0036 POINTERI = POINTERI + 1
      0390 0036 WEND
55     0393 0036
      0393 0036 GOSUB MESSAGE.OFF
      0399 0036 REANAME$ = SELNAME$
      03A3 0036 GOSUB TJDA
      03A9 0036 GOSUB DISP.DIR

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Reagent Jet Printer
Reagent Filing

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Offset	Data	Source Line	IBM Personal Computer BASIC Compiler V2.00
03AF	0036	RETURN	
03B3	0036		
03B3	0036	REM \$PAGE	

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Offset  Data   Source Line      15: Personal Computer BASIC Compiler V2.00

6
03B3 0036 TJ8: 'copy reagent
03B8 0036      TYPEZ = 0
03BF 0036      IF REANUMZ = 80 THEN FLAGZ = 3:GOSUB SHOW.ERROR:RETURN
03DB 0036      FUNCTZ = "Copy"
10 03E5 0036      GOSUB GET.SOURCE
03EB 0036      IF LEN(REANAME$) = 0 THEN RETURN
03FD 0036      GOSUB SEARCH
0403 0036      IF POINTERZ = 0 THEN FLAGZ = 1:GOSUB SHOW.ERROR:RETURN
041F 0036
15 041F 0036      GOSUB GET.NEW.NAME
0425 0036      IF LEN(NEWNAME$) = 0 THEN RETURN
0437 003A      IF LEN(NEWNAME$) > 15 THEN FLAGZ = 2:GOSUB SHOW.ERROR:R
      ETURN
0457 003A
20 0457 003A      MESSAGE$ = "Copying " + REANAME$ + " to " + NEWNAME$ +
      " Please wait..."
047C 003A      GOSUB MESSAGE.ON
0482 003A
0482 003A      'add new name at end of directory
25 0482 003A      KILL "READIR.OLD"
0489 003A      NAME "READIR.RJP" AS "READIR.OLD"
0493 003A      OPEN "READIR.OLD" FOR INPUT AS #1
04A4 003A      OPEN "READIR.RJP" FOR OUTPUT AS #2
04B6 003A
30 04B6 003A      INPUT #1, REANUMZ
04C8 003A      REANUMZ = REANUMZ + 1
04D1 003A      WRITE #2,REANUMZ
04E2 003A
04E2 003A      FOR IX = 1 TO REANUMZ - 1
35 04F1 003C          INPUT #1,TEMP$
0503 0040          PRINT #2,TEMP$
0513 0040      NEXT IX
0525 0040      PRINT #2,NEWNAME$
0535 0040
40 0535 0040      CLOSE #1:CLOSE #2
0543 0040
0543 0040      'create copy of data file
0543 0040      FILE$ = RIGHTS$(STR$(POINTERZ),LEN(STR$(POINTERZ))-1) +
      "REA.RJP"
45 0567 0040      NEWFILE$ = RIGHTS$(STR$(REANUMZ),LEN(STR$(REANUMZ))-1) +
      "REA.RJP"
058B 0044
058B 0044      OPEN FILE$ FOR INPUT AS #1
059C 0044      OPEN NEWFILE$ FOR OUTPUT AS #2
50 05AE 0044
05AE 0044      INPUT #1,TEMP
05C0 0048      WRITE #2,TEMP: 'frequency
05D0 0048      INPUT #1,TEMP
05E2 0048      WRITE #2,TEMP: 'pulse width
55 05F2 0048      INPUT #1,TEMP
0604 0048      WRITE #2,TEMP: 'strobe delay
0614 0048      INPUT #1,TEMP
0626 0048      WRITE #2,TEMP: 'nozzle
0636 0048

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Reagent Jet Printer
Reagent Filing

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Offset Data Source Line IBM Personal Computer BASIC Compiler V2.00

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0636	0048	INPUT #1,TEMP\$	
0648	0048	PRINT #2,TEMP\$:	'concentration
0658	0048	INPUT #1,TEMP\$	
066A	0048	PRINT #2,TEMP\$:	'density
067A	0048	INPUT #1,TEMP\$	
068C	0048	PRINT #2,TEMP\$:	'viscosity
069C	0048		
069C	0048	CLOSE #1:CLOSE #2	
06AA	0048		
06AA	0048	GOSUB MESSAGE.GFF	
06B0	0048	GOSUB DISP.DIR	
06B6	0048	RETURN	
06BA	0048		
06BA	0048	REM \$PAGE	

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Reagent Jet Printer
Reagent Filing

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Offset: Data Source Line IBM Personal Computer BASIC Compiler V2.00

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```

057F 004A TJS: 'select reagent for printing
0584 004A 'YFEI = 0
0889 004A FUNCTS = "Select"
0895 004A GOSUB GET.SOURCE
089B 004A IF LEN(REANAMES) = 0 THEN RETURN
08AB 004A IF REANAMES = SELNAMES THEN RETURN
08C3 004A GOSUB T3DA
08C6 004A GOSUB DISP.DIR
08CC 004A RETURN
08D0 004A
08D0 004A T3DA:
08D5 004A GOSUB SEARCH
08DB 004A IF POINTER1 = 0 THEN FLAG1 = 1:GOSUB SHOW.ERROR:RETURN
08F7 004A
30 08F7 004A MESSAGE$ = "Selecting " + REANAMES + " Please Wait.
..
090E 004A GOSUB MESSAGE.ON
0914 004A
0914 004A 'change entrys in reagent default file READEF.R
35 0914 004A JP
0926 004A OPEN "READEF.RJP" FOR OUTPUT AS #1
FILES = RIGHTS(STR$(POINTER1),LEN(STR$(POINTER1))-1) +
"REA.RJP"
094A 004A
40 094A 004A PRINT #1,FILES
095A 004A PRINT #1,REANAMES
096A 004A
096A 004A CLOSE #1
0971 004A GOSUB MESSAGE.OFF
45 0977 004A RETURN
097B 004A
097B 004A TJE: 'exit reagent filing
0980 004A RETURN
0984 004A
60 0984 004A REM $PAGE

```

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0 268 237

Reagent Get Premier
Reagent Filing

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Offset Data Source Line IBM Personal Computer BASIC Compiler V2.00

```

5      0984 004A SEARCH:
      0989 004A   POINTERZ = 0
      0990 004A   CFEN "READIR.RJP" FOR INPUT AS #1
      09A1 004A   INPUT #1,REANUMZ: 'get number of reagents in direc
10      tory
      09B3 004A   IF REANUMZ = 0 THEN CLOSE #1:RETURN
      09C9 004A   TEMP$ = ""
      09D3 004A   WHILE (POINTERZ < REANUMZ) AND (REANAMES <> TEMP$)
      09FB 004A       LINE INPUT #1,TEMP$
      0A06 004A       POINTERZ = POINTERZ + 1
15      0A11 004A   WEND
      0A14 004A   IF REANAMES <> TEMP$ THEN POINTERZ = 0
      0A2A 004A   CLOSE #1
      0A31 004A   RETURN
20      0A35 004A
      0A35 004A GET.SOURCE:
      0A3A 004A   LOCATE 25,1:COLOR 15,0:PRINT "Enter Reagent Name to 'FU
      NCT$ " *;
      0A6C 004A   LINE INPUT;"",REANAMES
      0A7A 004A   LOCATE 25,1:PRINT SPACES(79);
25      0A97 004A   RETURN
      0A9B 004A
      0A9B 004A GET.NEW.NAME:
      0AA0 004A   LOCATE 25,1:COLOR 15,0:PRINT "Enter New Reagent Name ";
      0AC6 004A   LINE INPUT;"",NEWNAME$
      0AD4 004A   LOCATE 25,1:PRINT SPACES(79);
30      0AF1 004A   RETURN
      0AF5 004A
      0AF5 004A DISP.DIR: 'display reagent directory in 4 columns of 20 r
35      cos
      0AFA 004A   'read selected reagent into SELNAME$
      0AFA 004A   OPEN "READIR.RJP" FOR INPUT AS #1
      0B03 004A   INPUT #1,SELNAME$: 'read and discard data file nam
40      e
      0B1D 004A   INPUT #1,SELNAME$: 'read and save reagent name
      0B2F 004A   CLOSE #1
      0B36 004A
      0B36 004A   OPEN "READIR.RJP" FOR INPUT AS #1
      0B47 004A   INPUT #1,REANUMZ: 'read number of reagents
45      0B59 004A   MESSAGE$ = "Reading Reagent Directory Please Wait"
      0B63 004A   GOSUB MESSAGE.ON
      0B69 004A   FLAGZ = 0
      0B70 004A   TEMPZ = REANUMZ - 1:IF REANUMZ < 80 THEN TEMPZ = REANUM
50      Z
      0BB8 004C   FOR IZ = 0 TO TEMPZ
      0B97 004E       LOCATE (IZ MOD 20)+1,(INT(IZ/20)+20)+1
      0BCA 004E       PRINT SPACES(18);
      0BDA 004E   NEXT IZ
      0BEC 004E
55      0BEC 004E   FOR IZ = 0 TO REANUMZ - 1
      0BFA 0050       INPUT #1,REANAMES
      0C0C 0050       LOCATE (IZ MOD 20)+1,(INT(IZ/20)+20)+3
      0C3F 0050       PRINT REANAMES;
      0C4C 0050       IF REANAMES = SELNAME$ THEN LOCATE (IZ MOD 20)+

```

```

5
      1,(INT(I2/20)+20)+1:PRINT "+";
      OC98 0050      NEXT I2
      OC80 0050      CLOSE #1
      OC87 0050      GOSUB MESSAGE.OFF
10      OC80 0050      RETURN
      OCCE 0050
      OCCE 0050      INITIALIZE:
      OCCE 0050      DIM MENU$(4,1)
      OCCE 0078      MENU$(0,0) = "Delete"
      OCCE 0078      MENU$(0,1) = "Remove a reagent file from the directory"
15      OCCE 0078      MENU$(1,0) = "Copy"
      OCCE 0078      MENU$(1,1) = "Copy a reagent file to a new reagent name"
      OCCE 0078
      OCCE 0078      MENU$(2,0) = "Rename"
      OCCE 0078      MENU$(2,1) = "Rename a reagent file in the directory"
20      OCCE 0078      MENU$(3,0) = "Select"
      OCCE 0078      MENU$(3,1) = "Select a reagent file to be printed"
      OCCE 0078      MENU$(4,0) = "Exit"
      OCCE 0078      MENU$(4,1) = "Return to the main menu"
      OCCE 0078
25      OCCE 0078      COLOR 9,0:CLS
      OCCE 0078      LOCATE 21,1
      OCCE 0078      FOR I2 = 1 TO 80
      OCCE 0078          PRINT "D";
30      OCCE 0078      NEXT I2
      OCCE 0078
      OCCE 0078      FOR MENUZ = 0 TO 4
      OCCE 0078          GOSUB MENU.OFF
      OCCE 0078      NEXT MENUZ
35      OCCE 0078
      OCCE 0078      GOSUB DISP.DIR
      OCCE 0078      IF FLAGZ > 0 THEN GOSUB SHOW.ERROR
      OCCE 0078      MENUZ = 4
      OCCE 0078      GOSUB MENU.ON
40      OCCE 0078
      OCCE 0078      RETURN
      OCCE 0078
      OCCE 0078      KEY.MENU:
      OCCE 0078      GOSUB MENU.OFF
45      OCCE 0078      MENUZ = MENUZ + DIFFZ
      OCCE 0078      GOSUB MENU.ON
      OCCE 0078      RETURN
      OCCE 0078
      OCCE 0078      MENU.DR:
50      OCCE 0078      LOCATE 22,(MENUZ+10)+18
      OCCE 0078      COLOR 0,7
      OCCE 0078      PRINT MENU$(MENUZ,0);
      OCCE 0078      LOCATE 25,40-LEN(MENU$(MENUZ,1))/2
      OCCE 0078      COLOR 7,0
      OCCE 0078      PRINT MENU$(MENUZ,1);
55      OCCE 0078      RETURN
      OCCE 0078
      OCCE 0078      MENU.OFF:
      OCCE 0078      LOCATE 22,(MENUZ+10)+18

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0268-237 00:00:00

Reagent Jet Printer
Reagent Filing

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Offset Data Source Line IBM Personal Computer BASIC Compiler V2.00

```

5
    0F45 0078      COLOR 14,0
    0F31 0078      PRINT MENU$(MENU$,0);
    0F6F 0078      LOCATE 25,40-LEN(MENU$(MENU$,1))/2
    0F43 0078      PRINT SPACES(LEN(MENU$(MENU$,1)));
10    0FC8 0078      RETURN
    0FCC 0078
    0FCC 0078      SHOW.ERROR:
    0FD1 0078      ON FLAG% GOSUB ER1, ER2, ER3, ER4
    0FE2 0078      ERRMSG$ = ERR$ + "      Strike any key.."
15    0FF2 0080      LOCATE 24,40-LEN(ERRMSG$)/2
    1014 0080      COLOR 13,0
    1020 0080      PRINT ERRMSG$;
    102B 0080      AS = ""
    1037 0080      WHILE AS = ""
20    1046 0080          AS = INKEY$
    1050 0080      WEND
    1053 0080      GOSUB MESSAGE.OFF
    1059 0080      RETURN
    105D 0080
25    105D 0080      ER1:
    1062 0080          ERR$ = REANAME$ + " Not Found in the Directory"
    1072 0080          RETURN
    1076 0080
    1076 0080      ER2:
30    1078 0080          ERR$ = "Reagent Name is too Long (15 characters max.)"
    1085 0080          RETURN
    1089 0080
    1089 0080      ER3:
35    108E 0080          ERR$ = "Directory is Full (60 reagents max.)"
    1098 0080          RETURN
    109C 0080
    109C 0080      ER4:
    10A1 0080          ERR$ = "Cannot Modify SELECTd reagent Name"
    10AB 0080          RETURN
40    10AF 0080
    10AF 0080      MESSAGE.ON:
    10B4 0080          LOCATE 24,38 - LEN(MESSAGE$) / 2:COLOR 11,0:PRINT MESSA
    10EF 0080      GE$;
    10F3 0080          RETURN
45    10F3 0080
    10F3 0080      MESSAGE.OFF:
    10FB 0080          LOCATE 24,1:COLOR 15,0:PRINT SPACES(79);
    1121 0080          RETURN
50    1125 0080
    1125 0080      END SUB
    112C 0080
    16C9 0080

```

55 50426 Bytes Available
45718 Bytes Free

0 Warning Error(s)
0 Severe Error(s)

BAD ORIGINAL

Offset Data Source Line IBM Personal Computer BASIC Compiler V2.00

```

5      0030 0006 REM $TITLE:'Reagent Jet Printer $SUBTITLE:'Pattern Filing'
      0030 0006 'MODULE - 'PATFILE' File Handling for patterns
      0030 0006 '
      0030 0006 'AUTHOR - R. A. Enevold
10     0030 0006 '
      0030 0006 'COPYRIGHT (C) 1985 ABBOTT LABORATORIES'
      0030 0006 '
      0030 0006 'REVISION - 1.0 02-12-86 NAE Creation of initial code
      0030 0006 '
15     0030 0006 'SYSTEM - This code can only be compiled by the BASCOM
      0030 0006 '      COMPILER, it will not run under the INTERPRETER!!
      0030 0006 '
      0030 0006 'DESCRIPTION:
      0030 0006 '      This module allow file handling for patterns. When inv
20     0030 0006 '      oted, it displays
      0030 0006 '      the current contents of the pattern directory in 4 colu
      0030 0006 '      ons of 20 entries
      0030 0006 '      each. The pattern which is currently selected for prin
      0030 0006 '      ting is marked by
25     0030 0006 '      an asterisk to the left of the pattern name. After the
      0030 0006 '      directory is listed
      0030 0006 '      the user is presented with 5 menu choices. The left an
      0030 0006 '      d right arrows are
      0030 0006 '      used to highlight menu items and the enter key is used
30     0030 0006 '      to invoke action.
      0030 0006 '      The menu choices and their actions are:
      0030 0006 '
      0030 0006 '      DELETE - Remove a pattern file from the directo
      0030 0006 '      ry
35     0030 0006 '      COPY - Copy a pattern file to a new pattern n
      0030 0006 '      ame, saving the old pattern
      0030 0006 '      RENAME - Change the name of the pattern without
      0030 0006 '      changing the pattern itself
      0030 0006 '      SELECT - Select a pattern for printing
40     0030 0006 '      EXIT - Return to the main menu
      0030 0006 '
      0030 0006 'DATA DICTIONARY
      0030 0006 '      TYPEI Which type of valid key was pushed
      0030 0006 '      MENUJ Which menu item is being pointer to (0-4)
45     0030 0006 '      DIFFI Distance to move MENUJ at left or right arro
      0030 0006 '
      0030 0006 '      FLAGI Error type 0-4
      0030 0006 '      POINTERI Position of PATNAMES in directory list
      0030 0006 '      PATNUMI Number of pattern names in directory
50     0030 0006 '      list
      0030 0006 '      ELNUMI Number of elements in a pattern file
      0030 0006 '      TEMPJ Storage for integers during pattern copy
      0030 0006 '      IJ Counter used during pattern copy
      0030 0006 '      JI Counter used during pattern copy
55     0030 0006 '      AS Misc. input string
      0030 0006 '      FUNCTS Printed at bottom of screen during prompt fo
      0030 0006 '      r pattern name
      0030 0006 '      PATNAMES Pattern name currently being worked on
      0030 0006 '      SELNAMES Pattern name currently selected for printing

```


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Reagent Jet Printer
Pattern Filing

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Offset	Data	Source Line	IBM Personal Computer BASIC Compiler V2.00
0030	0006	FILE\$	Filename of pattern data file
0030	0006	SFILE\$	Filename for source pattern data file used during copy
0030	0006	DFILE\$	Filename for destination pattern data file used during copy
0030	0006	NEWNAME\$	New pattern name for COPY and RENAME
0030	0006	TEMP\$	Pattern names are held here as the directory is being re-written
0030	0006	NEWFILE\$	Destination filename used while copying pattern data files
0030	0006	MESSAGES	A message printed at the bottom of the screen
0030	0006	MENU\$(4,1)	Array of strings containing the short and long menu names
0030	0006	ERRMSG\$	Message printed when any error occurs
0030	0006	ERR\$	Appended to ERRMSG\$ to indicate nature of error
0030	0006	TEMP	Storage of real variables while copying pattern data files
0030	0006	REM \$PAGE	

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Pattern Filing

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Offset	Data	Source Line	IBM Personal Computer BASIC Compiler V2.00
0030	0006	SUB PATTERN.FILE STATIC	
0047	0006	GO SUB INITIALIZE	
004D	0006	TYPE1 = 0	
0054	0008	WHILE TYPE1 <> 3	
005F	0008	AS = ""	
0069	000C	WHILE AS = ""	
0078	000C	AS = INKEY\$	
0082	000C	WEND	
0083	000C	IF AS = CHR\$(10) + CHR\$(75) THEN TYPE1 = 1:	
00AA	000C	'left arrow	
00CF	000C	IF AS = CHR\$(10) + CHR\$(77) THEN TYPE1 = 2:	
00CF	000C	'right arrow	
00CF	000C	IF AS = CHR\$(13) THEN TYPE1 = 3:	
00E9	000C	'(cr) to execute selection	
00E9	000C	ON TYPE1 GO SUB T1, T2, T3	
00FB	000C	WEND	
00FC	000C	EXIT SUB	
0100	000C	REM \$PAGE	

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Pattern Filing

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Offset Data Source Line IEN Personal Computer BASIC Compiler V2.00

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```

0100 000C '***** SUB-ROUTINES FOR THIS MODULE *****
0100 000C
0100 000C T1: 'left arrow
0105 000C TYPEZ = 0
010C 000C IF MENUZ = 0 THEN RETURN
0118 000C DIFFZ = -1
0122 0010 GOSUB NEW.MENU
0128 0010 RETURN
012C 0010
012C 0010 T2: 'right arrow
0131 0010 TYPEZ = 0
0138 0010 IF MENUZ = 4 THEN RETURN
0147 0010 DIFFZ = 1
014E 0010 GOSUB NEW.MENU
0154 0010 RETURN
0158 0010
0158 0010 T3: '<cr> (execute selected menu item)
015D 0010 LOCATE 25,1:PRINT SPACES(79);
017A 0010 ON MENUZ + 1 GOSUB T3A, T3B, T3C, T3D, T3E
018F 0010 GOSUB MENU.ON
0195 0010 RETURN
0199 0010
0199 0010 REX $PAGE

```

```

Offset  Data  Source Line  IBM Personal Computer BASIC Compiler V2.00

5
01F9 0010 TJA:      delete pattern
01FE 0010      TYPEI = 0
01A5 0010      FLACTI = "Delete"
01AF 0014      GOSUB GET.SOURCE
10 01B5 0014      IF LEN(PATNAME$) = 0 THEN RETURN
01C7 0018      IF PATNAME$ = SELNAME$ THEN FLAGI = 4:GOSUB SHOW.ERROR:
      RETURN
01E7 001E      GOSUB SEARCH
01ED 001E      IF POINTERI = 0 THEN FLAGI = 1:GOSUB SHOW.ERROR:RETURN
15 0209 0020
0209 0020      MESSAGE$ = "Deleting " + PATNAME$ + "      Please Wait..

0220 0024      GOSUB MESSAGE.ON
0226 0024
20 0226 0024      'rewrite directory deleting PATNAME$ as indicat
      ed by POINTERI
0226 0024      KILL "PATDIR.OLD"
022D 0024      NAME "PATDIR.RJP" AS "PATDIR.OLD"
0237 0024      OPEN "PATDIR.OLD" FOR INPUT AS #1
25 0248 0024      OPEN "PATDIR.RJP" FOR OUTPUT AS #2
025A 0024
025A 0024      INPUT #1, PATNUMI
026C 0026      PATNUMI = PATNUMI - 1
0275 0026      WRITE #2, PATNUMI
30 0286 0026
0286 0026      IF PATNUMI = 0 THEN GOTO DIR.DONE
0295 0026      FOR IZ = 1 TO PATNUMI + 1
02A4 0028          INPUT #1, PATNAME$
02B6 0028          IF IZ < POINTERI THEN PRINT #2, PATNAME$
35 02D3 002A      NEXT IZ
02E5 002A      DIR.DONE:
02EA 002A          CLOSE #1:CLOSE #2
02FB 002A
40 02FB 002A      'remove data file
02FB 002A      FILES = RIGHT$(STR$(POINTERI), LEN(STR$(POINTERI))-1) +
      "PAT.RJP"
031C 002E      KILL FILES
0323 002E
45 0323 002E      'rename remaining data files to maintain linked
      list with directory
0323 002E      WHILE (PATNUMI + 1) > POINTERI
0333 002E          SFILES = RIGHT$(STR$(POINTERI+1), LEN(STR$(POINT
      ERI+1))-1) + "PAT.RJP"
0359 0032          DFILES = RIGHT$(STR$(POINTERI), LEN(STR$(POINTE
      R+1))-1) + "PAT.RJP"
50 037D 0036          NAME SFILES AS DFILES
0387 0036          POINTERI = POINTERI + 1
039C 0036      WEND
55 0393 0036
0393 0036      GOSUB MESSAGE.OFF
0399 0036      PATNAME$ = SELNAME$
03A3 0036      GOSUB TJDA
03A9 0036      GOSUB DISP.DIR

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Offset Data Source Line

IBM Personal Computer BASIC Compiler V2.00

03AF 0036 RETURN
03B3 0036
03B3 0036 REM SPACE

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Pattern Filing

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IBM Personal Computer BASIC Compiler V2.00

```
5      0383 0036 722: 'copy pattern
      0388 0036 TYPEI = 0
      038F 0036 IF PATNUM1 = 80 THEN FLAG1 = 3:GOSUB SHOW.ERROR:RETURN
      03D8 0036 FUNCTS = 'Copy'
10     03E3 0036 GOSUB GET.SOURCE
      03EB 0036 IF LEN(PATNAMES) = 0 THEN RETURN
      03F7 0036 GOSUB SEARCH
      0403 0036 IF POINTER1 = 0 THEN FLAG1 = 1:GOSUB SHOW.ERROR:RETURN
      041F 0036
15     041F 0036 GOSUB GET.NEW.NAME
      0425 0036 IF LEN(NEWNAMES) = 0 THEN RETURN
      0437 0036 IF LEN(NEWNAMES) > 15 THEN FLAG1 = 2:GOSUB SHOW.ERROR:R
      RETURN
20     0457 003A
      0457 003A MESSAGES = 'Copying ' + PATNAMES + ' to ' + NEWNAMES +
      ' Please wait..'
      047C 003A GOSUB MESSAGE.ON
      0482 003A
      0482 003A 'add NEWNAMES at end of directory
25     0482 003A KILL 'PATDIR.OLD'
      0489 003A NAME 'PATDIR.RJP' AS 'PATDIR.OLD'
      0493 003A OPEN 'PATDIR.OLD' FOR INPUT AS #1
      04A4 003A OPEN 'PATDIR.RJP' FOR OUTPUT AS #2
      04B6 003A
30     04B6 003A INPUT #1, PATNUM1
      04C8 003A PATNUM1 = PATNUM1 + 1
      04D1 003A WRITE #2, PATNUM1
      04E2 003A
      04E2 003A FOR I1 = 1 TO PATNUM1 - 1
35     04F1 003C INPUT #1, TEMP1
      0503 0040 PRINT #2, TEMP1
      0513 0040 NEXT I1
      0525 0040 PRINT #2, NEWNAMES
      0535 0040
40     0535 0040 CLOSE #1:CLOSE #2
      0543 0040
      0543 0040 'create copy of pattern data file
      0543 0040 FILES = RIGHT$(STR$(POINTER1), LEN(STR$(POINTER1)) - 1) +
45     'PAT.RJP'
      0567 0040 NEWFILES = RIGHT$(STR$(PATNUM1), LEN(STR$(PATNUM1)) - 1) +
      'PAT.RJP'
      058B 0044
      058B 0044 OPEN FILES FOR INPUT AS #1
      059C 0044 OPEN NEWFILES FOR OUTPUT AS #2
      05AE 0044
50     05AE 0044 INPUT #1, ELNUM1
      05C0 0046 WRITE #2, ELNUM1
      05D1 0046
      05D1 0046 FOR I1 = 1 TO 4
55     05D8 0046 INPUT #1, TEMP
      05EA 004A WRITE #2, TEMP
      05FA 004A NEXT I1
      060A 004A
      060A 004A FOR I1 = 1 TO ELNUM1
```

Reagent Jet Printer
Pattern Filing

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IBM Personal Computer BASIC Compiler V2.00

```

5      Offset Data Source Line
      0617 004C      FOR JZ = 1 TO 6
      061E 004C      INPUT #1,TEMP1
      0630 004E      WRITE #2,TEMP1
      0641 004E      NEXT JZ
10     0651 0050      NEXT IZ
      0663 0050      CLOSE #1:CLOSE #2
      0671 0050      GOSUB MESSAGE.OFF
15     0677 0050      GOSUB DISP.DIR
      067D 0050      RETURN
      0681 0050      TJC:      'rename pattern
      0686 0050      TYPEZ = 0
      068D 0050      FUNCT$ = "Rename"
20     0697 0050      GOSUB GET.SOURCE
      069D 0050      IF LEN(PATNAME$) = 0 THEN RETURN
      06AF 0050      GOSUB SEARCH
      06B5 0050      IF POINTER1 = 0 THEN FLAGZ = 1:GOSUB SHOW.ERROR:RETURN
25     06D1 0050      GOSUB GET.NEW.NAME
      06D7 0050      IF LEN(NEWNAME$) = 0 THEN RETURN
      06E9 0050      IF LEN(NEWNAME$) > 15 THEN FLAGZ = 2:GOSUB SHOW.ERROR:R
      ETURN
30     0709 0050      IF NEWNAME$ = PATNAME$ THEN RETURN
      071C 0050      MESSAGE$ = "Renaming " + PATNAME$ + " to " + NEWNAME$ +
      071C 0050      "Please wait..."
      0741 0050      GOSUB MESSAGE.CX
35     0747 0050      'change pattern name in directory replacing PAT
      0747 0050      NAME$ with NEWNAME$
      0747 0050      KILL "PATDIR.OLD"
      074E 0050      NAME "PATDIR.RJP" AS "PATDIR.OLD"
40     0756 0050      OPEN "PATDIR.OLD" FOR INPUT AS #1
      0769 0050      OPEN "PATDIR.RJP" FOR OUTPUT AS #2
      0776 0050      INPUT #1, PATNUM1
      077B 0050      WRITE #2,PATNUM1
      078D 0050      INPUT #1, PATNUM2
      079E 0050      WRITE #2,PATNUM2
45     079E 0050      FOR IZ = 1 TO PATNUM2
      07AB 0052      INPUT #1,TEMP$
      07BD 0052      IF IZ <> POINTER1 THEN PRINT #2,TEMP$
      07DA 0052      IF IZ = POINTER1 THEN PRINT #2,NEWNAME$
50     07F7 0052      NEXT IZ
      0809 0052      CLOSE #1:CLOSE #2
      0817 0052      GOSUB MESSAGE.OFF
55     081D 0052      'select new pattern name if necessary
      081D 0052      IF PATNAME$ = SELNAME$ THEN PATNAME$ = NEWNAME$:GOSUB T
      083C 0052      3DA
      083C 0052      GOSUB DISP.DIR

```

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Pattern Filing

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Offset Data Source Line IBM Personal Computer BASIC Compiler V2.00

0842 0052 RETURN
0846 0052
0846 0052 REM \$PAGE

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Pattern Filing

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Offset Data Source Line IBM Personal Computer BASIC Compiler V2.00

0846 0052 TJD: 'select pattern for printing
0848 0052 TYPE1 = 0
0852 0052 FUNCT\$ = 'Select'
085C 0052 GOSUB GET.SOURCE
0862 0052 IF LEN(PATNAME\$) = 0 THEN RETURN
0874 0052 IF PATNAME\$ = SELNAME\$ THEN RETURN
0887 0052 GOSUB TJD
088D 0052 GOSUB DISP.DIR
0893 0052 RETURN
0897 0052
0897 0052 TJD: SEARCH
089C 0052 GOSUB SEARCH
08A2 0052 IF POINTER1 = 0 THEN FLAG1 = 1:GOSUB SHOW.ERROR:RETURN
08BE 0052
08C2 0052 MESSAGE\$ = 'Selecting ' + PATNAME\$ + ' Please Wait.
08D5 0052 GOSUB MESSAGE.ON
08DB 0052
08DB 0052 'change entries in pattern default file PATDEF.R
08DB 0052 JP
08DB 0052 OPEN "PATDEF.RJP" FOR OUTPUT AS #1
08ED 0052 FILE\$ = RIGHT\$(STR\$(POINTER1),LEN(STR\$(POINTER1))-1) +
"PAT.RJP"
0911 0052
0911 0052 PRINT #1,FILE\$
0921 0052 PRINT #1,PATNAME\$
0931 0052
0931 0052 CLOSE #1
0938 0052 GOSUB MESSAGE.OFF
093E 0052 RETURN
0942 0052
0942 0052 TJE: 'exit pattern filing
0947 0052 RETURN
094B 0052
094B 0052 REM \$PAGE

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Pattern Filing

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IBM Personal Computer BASIC Console V2.00

```

5      0948 0052 SEARCH:
      0950 0052 POINTERI = 0
      0957 0052 OPEN "PATDIR.RJP" FOR INPUT AS #1
      0968 0052 INPUT #1,PATNUMI:  get number of patterns in direc
10      lory
      097A 0052 IF PATNUMI = 0 THEN CLOSE #1:RETURN
      0990 0052 TEMP$ = ""
      099A 0052 WHILE (POINTERI < PATNUMI) AND (PATNAME$ <> TEMP$)
      09C2 0052     LINE INPUT #1,TEMP$
      09CF 0052     POINTERI = POINTERI + 1
15      09DB 0052 WEND
      09DB 0052 IF PATNAME$ <> TEMP$ THEN POINTERI = 0
      09F1 0052 CLOSE #1
      09FB 0052 RETURN
20      09FC 0052
      09FC 0052 GET.SOURCE:
      0A01 0052     LOCATE 25,1:COLOR 15,0:PRINT "Enter Pattern Name to 'FU
      WETS" ";
      0A33 0052     LINE INPUT:"",PATNAME$
      0A41 0052     LOCATE 25,1:PRINT SPACES(79);
25      0A5E 0052     RETURN
      0A62 0052
      0A62 0052 GET.NEW.NAME:
      0A67 0052     LOCATE 25,1:COLOR 15,0:PRINT "Enter New Pattern Name ";
      0ABD 0052     LINE INPUT:"",NEWNAME$
      0A9B 0052     LOCATE 25,1:PRINT SPACES(79);
30      0ABB 0052     RETURN
      0ABC 0052
      0ABC 0052 DISP.DIR:  'display directory in 4 columns, 20 rows
35      0AC1 0052     'read default pattern name into SELNAME$
      0AC1 0052     OPEN "PATDEF.RJP" FOR INPUT AS #1
      0AD2 0052     INPUT #1,SELNAME$:  'discard data file name
      0AE4 0052     INPUT #1,SELNAME$
      0AF6 0052     CLOSE #1
40      0AFD 0052
      0AFD 0052     OPEN "PATDIR.RJP" FOR INPUT AS #1
      0B0E 0052     INPUT #1,PATNUMI:  read number of patterns
      0B20 0052
      0B20 0052     MESSAGE$ = "Reading Pattern Directory  Please Wait"
45      0B2A 0052     GOSUB MESSAGE.ON
      0B30 0052     FLAG1 = 0
      0B37 0052     TEMP1 = PATNUMI - 1:IF PATNUMI < 80 THEN TEMP1 = PATNUM
      I
50      0B52 0052     FOR I1 = 0 TO TEMP1
      0B5E 0054         LOCATE (I1 MOD 20)+1,(INT(I1/20)+20)+1
      0B91 0054         PRINT SPACES(18);
      0BA1 0054     NEXT I1
      0BB3 0054
      0BB3 0054     FOR I1 = 0 TO PATNUMI - 1
      0BC1 0056         INPUT #1,PATNAME$
      0BD3 0056         LOCATE (I1 MOD 20)+1,(INT(I1/20)+20)+3
      0CD6 0056         PRINT PATNAME$;
      0C13 0056         IF PATNAME$ = SELNAME$ THEN LOCATE (I1 MOD 20)+
      1,(INT(I1/20)+20)+1:PRINT "*";

```


Reagent Jet Printer
Pattern Filing

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Offset Data Source Line IBM Personal Computer BASIC Compiler V2.00

```

5      OC62 0056      NEXT I%
      OC77 0056      CLOSE #1
      OC7E 0056      GOSUB MESSAGE.OFF
      OC84 0056      RETURN
10     OC86 0056
      OC88 0056      INITIALIZE:
      OC8D 0056      DIM MENU$(4,1)
      OC8E 007E      MENU$(0,0) = "Delete"
      OC86 007E      MENU$(0,1) = "Remove a pattern file from the directory"
15     OCC1 007E      MENU$(1,0) = "Copy"
      OCDC 007E      MENU$(1,1) = "Copy a pattern file to a new pattern name

      OCFS 007E      MENU$(2,0) = "Rename"
      OD12 007E      MENU$(2,1) = "Rename a pattern file in the directory"
20     OD30 007E      MENU$(3,0) = "Select"
      OD4B 007E      MENU$(3,1) = "Select a pattern file to be printed"
      OD67 007E      MENU$(4,0) = "Exit"
      OD82 007E      MENU$(4,1) = "Return to the main menu"
      OD9E 007E

25     OD9E 007E      COLOR 9,0:CLS
      ODB1 007E      LOCATE 21,1
      ODBE 007E      FOR I% = 1 TO 80
      ODC5 007E          PRINT "D";
      ODD2 007E      NEXT I%

30     ODE2 007E
      ODE2 007E      FOR MENU% = 0 TO 4
      ODEB 007E          GOSUB MENU.OFF
      ODEE 007E      NEXT MENU%
      ODFF 007E

35     ODFF 007E      GOSUB DISP.DIR
      OE04 007E      IF FLAG% > 0 THEN GOSUB SHOW.ERROR
      OE15 007E      MENU% = 4
      OE1C 007E      GOSUB MENU.ON
      OE22 007E

40     OE22 007E      RETURN
      OE26 007E
      OE26 007E      NEW.MENU:
      OE2B 007E          GOSUB MENU.OFF
      OE31 007E          MENU% = MENU% + DIFF%
      OE3D 007E          GOSUB MENU.ON
      OE43 007E      RETURN
      OE47 007E
      OE47 007E      MENU.ON:
      OE4C 007E          LOCATE 22,(MENU%+10)+18
50     OE63 007E          COLOR 0,7
      OE6F 007E          PRINT MENU$(MENU%,0);
      OE8D 007E          LOCATE 25,40-LEN(MENU$(MENU%,1))/2
      OEC1 007E          COLOR 7,0
      OEC9 007E          PRINT MENU$(MENU%,1);
      OEED 007E      RETURN
55     OEF0 007E
      OEF0 007E      MENU.OFF:
      OEFS 007E          LOCATE 22,(MENU%+10)+18
      OF0C 007E          COLOR 14,0

```

Reagent Jet Printer
Pattern Filing

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Offset Data Source Line IBM Personal Computer BASIC Compiler V2.00

```

5      0F18 007E      PRINT MENU$(MENUZ,0);
      0F36 007E      LOCATE 25,40-LEN(MENU$(MENUZ,1))/2
      0F6A 007E      PRINT SPACES(LEN(MENU$(MENUZ,1)));
      0F8F 007E      RETURN
10     0F93 007E
      0F93 007E      SHOW.ERROR:
      0F98 007E      ON FLAG% GOSUB ER1, ER2, ER3, ER4
      0FA9 007E      ERRMSG$ = ERR$ + " Strike any key.."
      0FB9 0086      LOCATE 24,40-LEN(ERRMSG$)/2
15     0FDB 0086      COLOR 13,0
      0FE7 0086      PRINT ERRMSG$;
      OFF4 0086      AS = ""
      OFFE 0086      WHILE AS = ""
20     100D 0086          AS = INKEY$
      1017 0056      WEND
      101A 0086      GOSUB MESSAGE.OFF
      1020 0086      RETURN
      1024 0086
      1024 0086      ER1:
25     1029 0086          ERR$ = PATNAME$ + " Not Found in the Directory"
      1039 0086          RETURN
      103D 0086
      103D 0086      ER2:
30     1042 0086          ERR$ = "Pattern Name is too Long (15 characters max.)"
      104C 0086          RETURN
      1050 0086
      1050 0086      ER3:
35     1055 0086          ERR$ = "Directory is Full (80 patterns max.)"
      105F 0086          RETURN
      1063 0086
      1063 0086      ER4:
40     1068 0086          ERR$ = "Cannot Modify SELECTd pattern Name"
      1072 0086          RETURN
      1076 0086
      1076 0086      MESSAGE.ON:
45     1078 0086          LOCATE 24,38 - LEN(MESSAGE$) / 2:COLOR 11,0:PRINT MESSA
      1086 0086      GE$;
      1086 0086          RETURN
      108A 0086
      108A 0086
50     108A 0086      MESSAGE.OFF:
      108F 0086          LOCATE 24,1:COLOR 15,0:PRINT SPACES(79);
      10EB 0086          RETURN
      10EC 0086
      10EC 0086      END SUB
      10F3 0086
      1688 0086

```

30426 Bytes Available
45670 Bytes Free

0 Warning Error(s)
0 Severe Error(s)

Reagent Jet Printer
Main Line Code

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```

Offset Data Source Line IBM Personal Computer BASIC Compiler V2.00

8      0030 0006 REM $TITLE: 'Reagent Jet Printer' $SUBTITLE: 'Main Line Code'
      0030 0006
      0030 0006 'MODULE - 'MAIN'
      0030 0006
10     0030 0006 'AUTHOR - M. A. Enevold
      0030 0006
      0030 0006 'COPYRIGHT (C) 1986 ABBOTT LABORATORIES
      0030 0006
      0030 0006 'REVISION - 1.1 02-19-86 NAE Add notes and revise TYPEX resetin
15     9      - 1.0 02-14-86 NAE Creation of initial code
      0030 0006
      0030 0006 'SYSTEM - This code can only be compiled by the BASCOM
      0030 0006 COMPILER, it will not run under the INTERPRETER!!
20     0030 0006
      0030 0006 'DESCRIPTION
      0030 0006 This is the main controlling module for the Reagent Jet
      0030 0006 Printer.
25     0030 0006 It displays a menu in table form that allows 6 function
      0030 0006 s to be
      0030 0006 selected. PATTERN DEFINITION allows the user to define
      0030 0006 patterns
      0030 0006 to be printed. PATTERN FILING lets the user delete, co
30     py, rename
      0030 0006 and select patterns for printing. REAGENT CALIBRATION
      0030 0006 permits setting
      0030 0006 of operation parameters for different reagents. REAGEN
      0030 0006 T FILING is
35     0030 0006 the same as pattern filing. PRINTING PRINT prints the
      0030 0006 selected
      0030 0006 pattern with the selected reagent. SYSTEM EXIT TO DOS
      0030 0006 ends the session.
      0030 0006 Using up and down arrow keys let the user move through
40     the menu and
      0030 0006 the Enter (cr) key activates the selection.
      0030 0006
      0030 0006 'DATA DICTIONARY
      0030 0006
      0030 0006 MENUZ This value represents the current menu
45     item (0-5)
      0030 0006 MENU$(5,1) String array for displaying menu items.
      0030 0006 6 rows by 2 columns
      0030 0006 Each row corresponds to a menu item (0-
50     5)
      0030 0006 First column is short menu name in high
      0030 0006 lighted area
      0030 0006 Second column is long description displ
      0030 0006 ayed at menu bottom
      0030 0006 ROWZ(5) This array stores to row in which the s
      0030 0006 hort menu name will be displayed
55     0030 0006 DIFFZ This value is used it change MENUZ in r
      0030 0006 esponse to arrow keys
      0030 0006 TYPEZ This value is set based on which valid
      0030 0006 key is pressed
      0030 0006 0 = No valid key. 1 = Up Arrow. 2 = D

```

0,268 237

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Offset	Data	Source Line	IBM Personal Computer BASIC Compiler V2.00
		own Arrow. 3 = (cr).	
0030	0006	TEMP1	Used to store MENU2 while screen is ref
		reshed	
0030	0006	AS	Used to store single input keystrokes
0030	0006	CS	Used to store special graphics character
		rs used in drawing the menu table	
0030	0006	IX	Counter used to refresh display
0030	0006	RZ	Row in which special graphics character
		is displayed	
0030	0006	CX	Column in which special graphics character
		ter is displayed	
0030	0006	REM \$PAGE	

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Offset	Data	Source Line	IBM Personal Computer BASIC Compiler V2.00
0030	0006		
0030	0006	Main-line code for RJP Reagent Jet Printer	
0030	0006		
0030	0006	MAIN.LINE.CODE:	
0030	0006		
0030	0006	ECOSUB INITIALIZE	
0043	0006		
0045	0006	WHILE TYPE1 <> 3	
0056	0008		
0056	0008	TYPE1 = 0	
005D	0008	AS = ""	
0067	000C	WHILE AS = ""	
0076	000C	AS = INKEY\$	
0080	000C	WEND	
0083	000C		
0083	000C	IF AS = CHR\$(0) + CHR\$(72) THEN TYPE1 = 1:	
		up arrow	
00A8	000C	IF AS = CHR\$(0) + CHR\$(80) THEN TYPE1 = 2:	
		down arrow	
00CD	000C	IF AS = CHR\$(13) THEN TYPE1 = 3:	
		(cr) execute command	
00E7	000C		
00E7	000C	ON TYPE1 GOSUB T1, T2, T3	
00F6	000C		
00F6	000C	WEND	
00FA	000C		
00FA	000C	CLS	
0101	000C	COLOR 7,0,0	
0112	000C	SYSTEM	
0116	000C		
0116	000C	REM \$PAGE	

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	Offset	Data	Source Line	IGN Personal Computer BASIC Compiler V2.00
6			Reagent Jet Printer	PAGE 4
			Main Line Code	07-09-86
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	0116	000C	'***** SUB-ROUTINES FOR MAIN PROGRAM	
70	0116	000C	T1: 'up arrow	
	011B	000C	IF MENUZ = 0 THEN RETURN	
	012A	000E	DIFFZ = -1	
	0131	0010	GOSUB NEW.MENU	
	0137	0010	RETURN	
15	013B	0010		
	013B	0010	T2: 'down arrow	
	0140	0010	IF MENUZ = 5 THEN RETURN	
	014F	0010	DIFFZ = 1	
	0156	0010	GOSUB NEW.MENU	
20	015C	0010	RETURN	
	0160	0010		
	0160	0010	TJ:	
	0165	0010	ON MENUZ + 1 GOSUB TJ1, TJ2, TJ3, TJ4, TJ5, TJ6	
	017C	0010	IF MENUZ < 5 THEN TYPEZ = 0: reset TYPEZ so program	
25			won't end	
	018E	0010	SCREEN 0,0,3,3	
	01A5	0010	RETURN	
	01A9	0010		
	01A9	0010	TJ1: 'pattern definition	
30	01AE	0010	CALL PATENTRY: 'in module PATENT	
	01BA	0010	GOSUB REFRESH	
	01C0	0010	RETURN	
	01C4	0010		
	01C4	0010	TJ2: 'pattern filling	
35	01C9	0010	SCREEN 0,0,0,0:CLS	
	01E5	0010	CALL PATTERN.FILE: 'in module PATFILE	
	01F1	0010	RETURN	
	01F5	0010		
	01F5	0010	TJ3: 'reagent calibration	
40	01FA	0010	CALL REAGENT.CALIBRATE: 'in module REACAL	
	0206	0010	RETURN	
	020A	0010		
	020A	0010	TJ4: 'reagent filling menu	
	020F	0010	SCREEN 0,0,0,0:CLS	
45	022B	0010	CALL REAGENT.FILE: 'in module REAFILE	
	0237	0010	RETURN	
	023B	0010		
	023B	0010	TJ5: 'print pattern	
	0240	0010	CALL PATPRINT: 'in module PATPRINT	
50	024C	0010	RETURN	
	0250	0010		
	0250	0010	TJ6: 'exit system, don't reset TYPEZ	
	0255	0010	RETURN	
	0259	0010		
55	0259	0010	REM \$PAGE	

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Offset Data Source Line IBM Personal Computer BASIC Compiler V2.00

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5      0259 0010 NEW.MENU:
      025E 0010      GOSUB MENU.OFF
      0264 0010      MENU1 = MENU1 + DIFF1
      0270 0010      GOSUB MENU.ON
10     0276 0010      RETURN
      027A 0010
      027A 0010 INITIALIZE:
      027F 0010      CALL PCI.INIT
      028B 0010
15     028B 0010      define and initialize arrays
      028B 0010      DIM ROW1(5)
      028C 0010      ROW1(0) = 4
      029E 0010      ROW1(1) = 6
      02B1 0010      ROW1(2) = 10
20     02C4 0010      ROW1(3) = 12
      02D7 0010      ROW1(4) = 16
      02EA 0010      ROW1(5) = 20
      02FD 0010
      02FD 0010      DIM MENU1(5,1)
25     02FE 0010      RESTORE MENU.STRING.DATA
      0305 0010      FOR I1 = 0 TO 5
      030B 0010          READ MENU1(I1,0),MENU1(I1,1)
      033B 0010      NEXT I1
      034B 0010
30     034B 0010      set initial values into variables
      034B 0010      TYPE1 = 0
      0352 0010      MENU1 = 0
      0359 0010
      0359 0010 REFRESH: redraw screen and highlight current menu selection
35     035E 0010
      035E 0010      SCREEN 0,0,0:CLS:COLOR 7,0,0
      038B 0010      LOCATE 10,32:PRINT "Loading Menu....."
      03A5 0010      SCREEN 0,0,3,0:CLS
40     03C2 0010
      03C2 0010      COLOR 13,0
      03CE 0010      LOCATE 1,31
      03DB 0010      PRINT "REAGENT JET PRINTER";
      03EB 0010      COLOR 10,0
45     03F4 0010      LOCATE 5,26
      0401 0010      PRINT "PATTERN"
      040E 0010      LOCATE 11,26
      041B 0010      PRINT "REAGENT"
      042B 0010      LOCATE 16,26
50     0435 0010      PRINT "PRINTING"
      0442 0010      LOCATE 20,27
      044F 0010      PRINT "SYSTEM"
      045C 0010
      045C 0010      draw the menu table in special graphics characters
55     045C 0010      COLOR 9,0
      046B 0010      FOR I1 = 18 TO 63
      046F 0010          LOCATE 2,I1:PRINT "D";
      048A 0010          LOCATE 8,I1:PRINT "D";
      04A5 0010          LOCATE 14,I1:PRINT "D";

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Offset Data Source Line IBM Personal Computer BASIC Compiler V2.00

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5      04C0 004E      LOCATE 18,11:PRINT "D";
      04DB 004E      LOCATE 22,11:PRINT "D";
      04F6 004E      LOCATE 24,11:PRINT "D";
      0511 004E      NEXT I1
10     0524 004E      FOR I1 = 3 TO 23
      052B 004E      LOCATE 11,17:PRINT "J";
      0546 004E      LOCATE 11,64:PRINT "J";
      0561 004E      NEXT I1
      0571 004E      RESTORE TABLE
15     057B 004E      FOR I1 = 1 TO 12
      057F 004E      READ R1,C1,C3
      0592 0056      LOCATE R1,C1:PRINT C3;
      05AE 0056      NEXT I1
      05BE 0056      print the instructions
20     05BE 0056      COLOR 7,0
      05CA 0056      LOCATE 25,6
      05D7 0056      PRINT "Use or to highlight menu items. Use to
      activate selection.";
25     05E4 0056      COLOR 15,0
      05E4 0056      ;
      060A 0056      LOCATE 25,15:PRINT "";
      0624 0056      LOCATE 25,47:PRINT "DY";
30     063E 0056      display the 6 menu choices
      063E 0056      TEMP1 = MENU1
      0645 0058      FOR MENU1 = 0 TO 5
      064B 0058      GOSUB MENU.OFF
35     0651 0058      NEXT MENU1
      0661 0058      MENU1 = TEMP1
      0668 0058      highlight the currently active menu item
      0668 0058      GOSUB MENU.ON
40     066E 0058      SCREEN 0,0,3,3
      066E 0058      RETURN
      0685 0058      RETURN
      0687 0058      MENU.ON: highlight the menu MENU1 and display its long description
45     0687 0058      ion
      068E 0058      COLOR 0,7
      069A 0058      LOCATE XROW1(MENU1),52-LEN(MENU1(MENU1,0))/2
      06DA 0058      PRINT MENU1(MENU1,0);
      06F6 0058      COLOR 7,0
50     0704 0058      LOCATE 23,40.5-LEN(MENU1(MENU1,1))/2
      073B 0058      PRINT MENU1(MENU1,1);
      0757 0058      RETURN
      075B 0058      MENU.OFF: un-highlight menu MENU1 and erase long description
55     075B 0058      COLOR 14,0
      0760 0058      LOCATE XROW1(MENU1),52-LEN(MENU1(MENU1,0))/2
      076C 0058      PRINT MENU1(MENU1,0);
      07AC 0058      COLOR 7,0
      07CA 0058      LOCATE 23,40.5-LEN(MENU1(MENU1,1))/2
      07D6 0058

```

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Offset Data Source Line IBM Personal Computer BASIC Compiler V2.00

30

```
060A 0056 PRINT SPACE$(LEN(MENU$(MENUZ,1)));
062F 0058 RETURN
0833 0058
0833 0058 REM SPACE
```

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5      Offset Data   Source Line   IBM Personal Computer BASIC Compiler V2.00

      0833 0058 ***** DATA FIELDS USED BY THE MAIN PROGRAM *****
      0833 0058
10     0833 0058 KENJ.STRING.DATA:   'first entry is menu name, second is lo
      0838 0058          description
      0838 0058          DATA "DEFINITION", "Create and Modify Patterns"
      083A 0058          DATA "FILING", "Delete, Copy, Rename, and Select Pa
15     083C 0058          tterns"
      083E 0058          DATA "CALIBRATION", "Calibrate and Modify Reagent Profil
      083E 0058          es"
      083E 0058          DATA "FILING", "Delete, Copy, Rename, and Select Re
20     0840 0058          agents"
      0840 0058          DATA "PRINT", "Print Selected Pattern with Selecte
      0842 0058          d Reagent"
      0842 0058          DATA "EXIT TO DOS", "Leave Program and Return to DOS"
      0844 0058
      0844 0058 TABLE: 'first entry is row, second is column, third is special
25     0849 0058          graphics character
      0849 0058          DATA 2,17,"?"
      084B 0058          DATA 2,64,"?"
      084D 0058          DATA 8,17,"C"
      084F 0058          DATA 8,64,"4"
30     0851 0058          DATA 14,17,"C"
      0853 0058          DATA 14,64,"4"
      0855 0058          DATA 18,17,"C"
      0857 0058          DATA 18,64,"4"
      0859 0058          DATA 22,17,"C"
35     085B 0058          DATA 22,64,"4"
      085D 0058          DATA 24,17,"8"
      085F 0058          DATA 24,64,"Y"
      0861 0058
      0861 0058          END
40     0865 0058
      0842 0058

```

50426 Bytes Available
47680 Bytes Free

0 Warning Error(s)
0 Severe Error(s)

50 Claims

1. A dispensing system for use in diagnostic instruments for precise metering of a desired diagnostic fluid, the system comprising:
 - 55 a jetting chamber defining a volume and comprising a first and second aperture, the first aperture adapted to receive diagnostic fluid, the second aperture defining an orifice;
 - a transducer in mechanical communication with the jetting chamber, the transducer operative to alternately expand and de-expand the volume of the jetting chamber in response to a selected electrical pulse and

thereby cause the jetting chamber to emit a substantially uniformly sized droplet of diagnostic fluid through the orifice; and

means for generating a number of electrical pulses sufficient to cause a desired quantity of the diagnostic fluid to be dispensed.

5 2. The invention of Claim 1 wherein the system further comprises:

at least one additional jetting chamber in fluid communication with an additional diagnostic fluid;

at least one additional transducer in mechanical communication with the additional jetting chamber;

at least one additional means for applying an electrical pulse to the additional transducer;

10 means for generating respective numbers of electrical pulses sufficient to cause precise quantities of the diagnostic fluids to be dispensed in a desired volumetric ratio; and
a receptacle adapted for and positioned to receive the fluids.

3. The invention of Claim 1 wherein the system further comprises:

means for directing at least one of (1) the receptacle and (2) the emitted diagnostic fluid and the emitted additional diagnostic fluid such that desired quantities of the fluids are dispensed into the receptacle in a
15 predefined dispensing order.

4. The invention of Claim 1 wherein one of the diagnostic fluids comprises serum and wherein the jetting chambers cooperate such that the other diagnostic fluid is emitted in a manner to contact and mix with the serum.

5. The invention of Claim 1 wherein the jetting chamber comprises a cylindrical tube and wherein the
20 transducer is mounted concentrically about the cylindrical tube.

6. The invention of Claim 1 wherein the jetting chamber is conically shaped.

7. The invention of Claim 1 wherein the jetting chamber comprises at least one chamber wall which is integrally formed with the transducer.

8. The invention of Claim 1 wherein the transducer is one of (1) a piezo-electric transducer; (2) a
25 magneto-strictive transducer; (3) an electro-strictive transducer; and (4) an electro-mechanical transducer.

9. The invention of Claim 1 wherein the jetting chamber is conically shaped; and wherein the transducer is disc shaped and forms the base of the conically shaped jetting chamber.

10. The invention of Claim 1 wherein the orifice comprises an end face and the end face is coated with a hydrophobic polymer.

30 11. The invention of Claim 1 wherein the transducer is cylindrically shaped and comprises a first electrode located on the inner wall of the cylinder and wraps around one end of the cylinder and wherein a second electrode is located substantially on the outer wall of the cylinder and is electrically isolated from the first electrode.

12. The invention of Claim 1 wherein the means for generating produces an electrical pulse of selected
35 rise and fall time constants and of selected duration, voltage and polarity.

13. The invention of Claim 1 wherein the means for generating the electrical pulse comprises means for scaling the voltage of the pulse in response to a selectable digital value.

14. The invention of Claim 1 wherein the apparatus further comprises means for directing the emitted diagnostic fluid along a desired path.

40 15. A method of dispensing precise quantities of diagnostic fluids comprising the steps of:

(a) generating an electrical pulse of predefined characteristics;

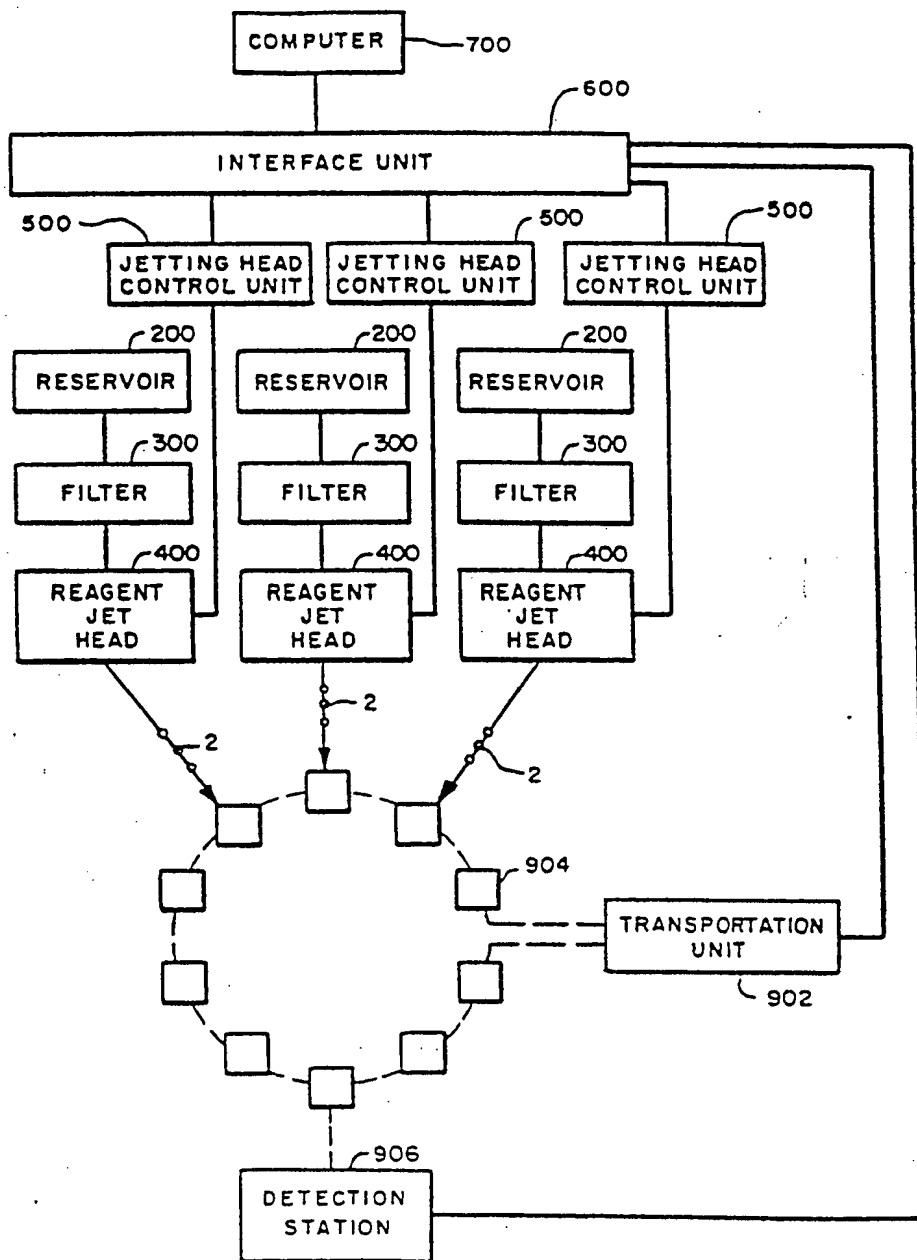
(b) reducing the volume of a chamber containing the diagnostic fluid by electro-mechanical means in response to the electrical pulse such that a droplet of fluid of known volume is propelled through an orifice in the chamber; and

45 (c) repeating steps (a) and (b) until a desired quantity of the diagnostic fluid has been dispensed

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FIG. 1



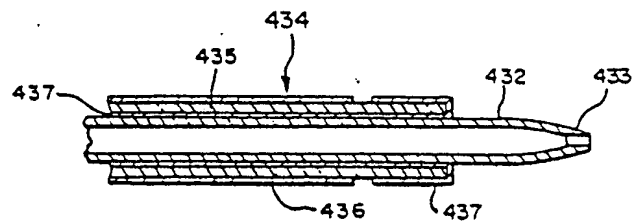
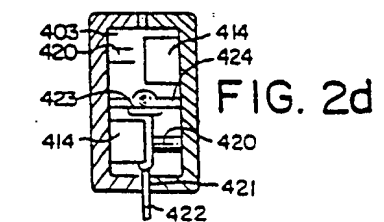
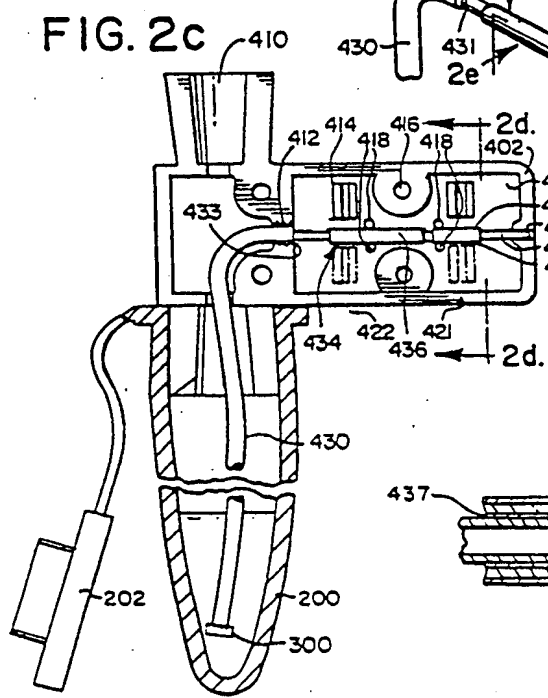
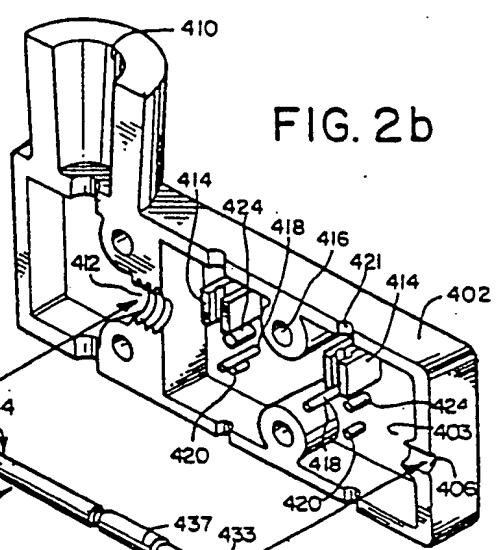
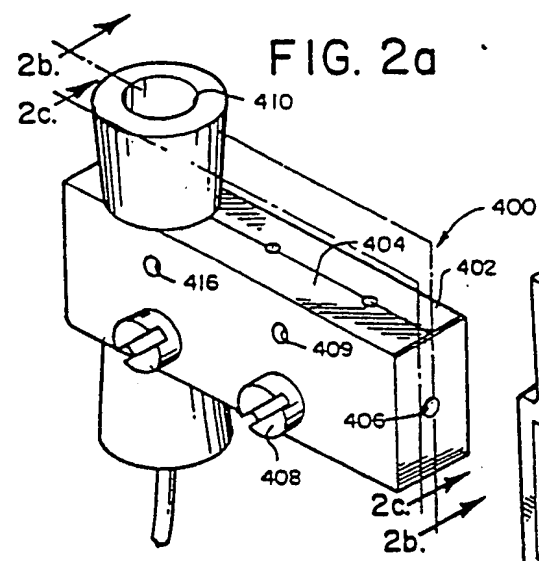


FIG. 3

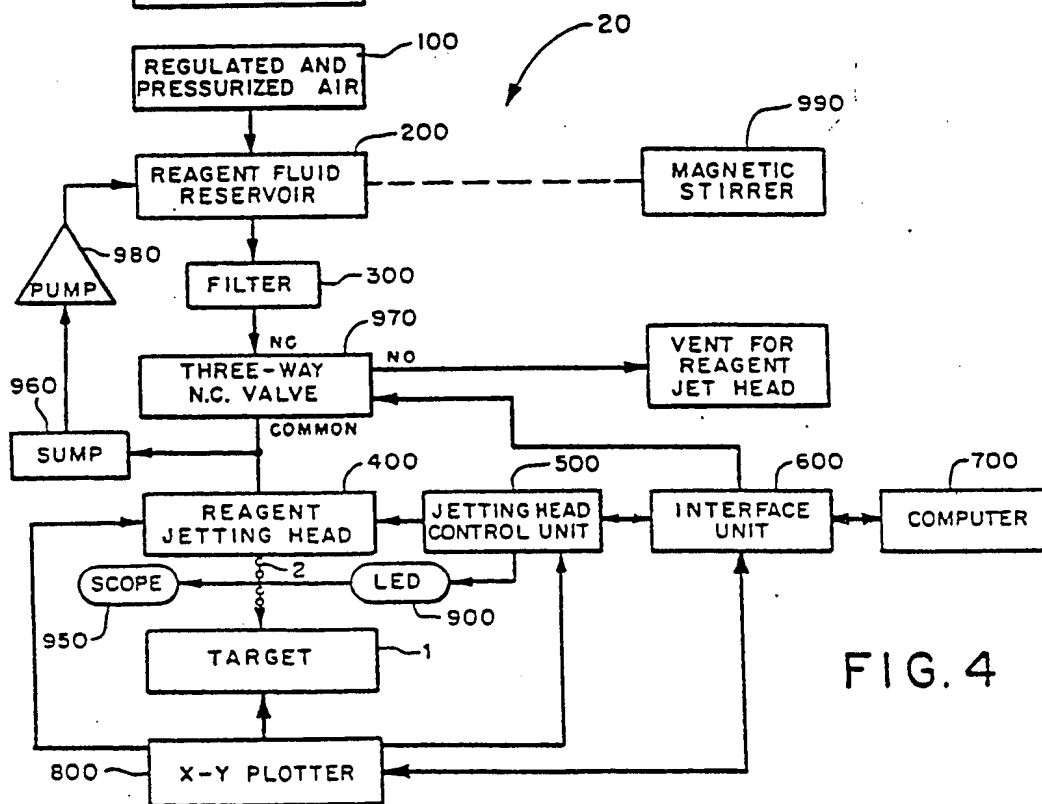
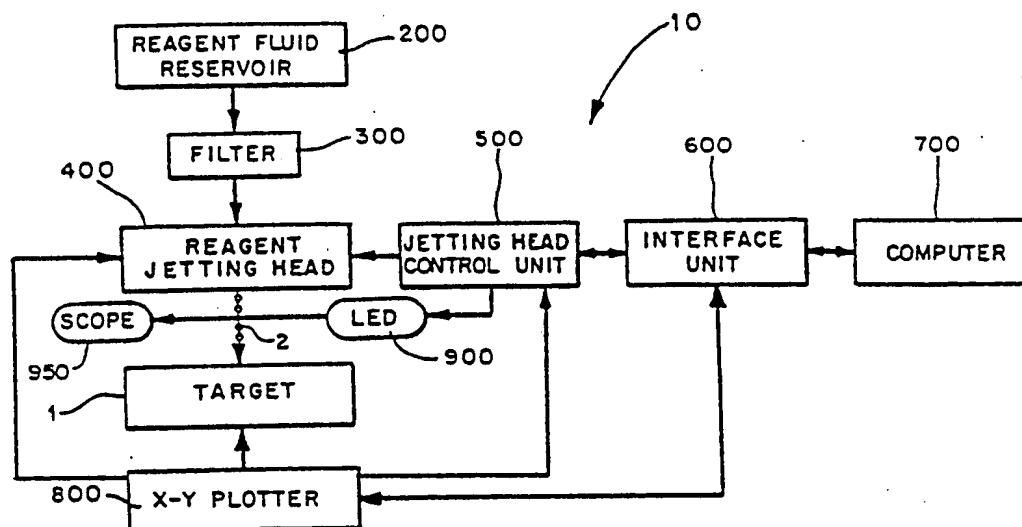


FIG. 4





FIG. 5C

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FIG. 5d

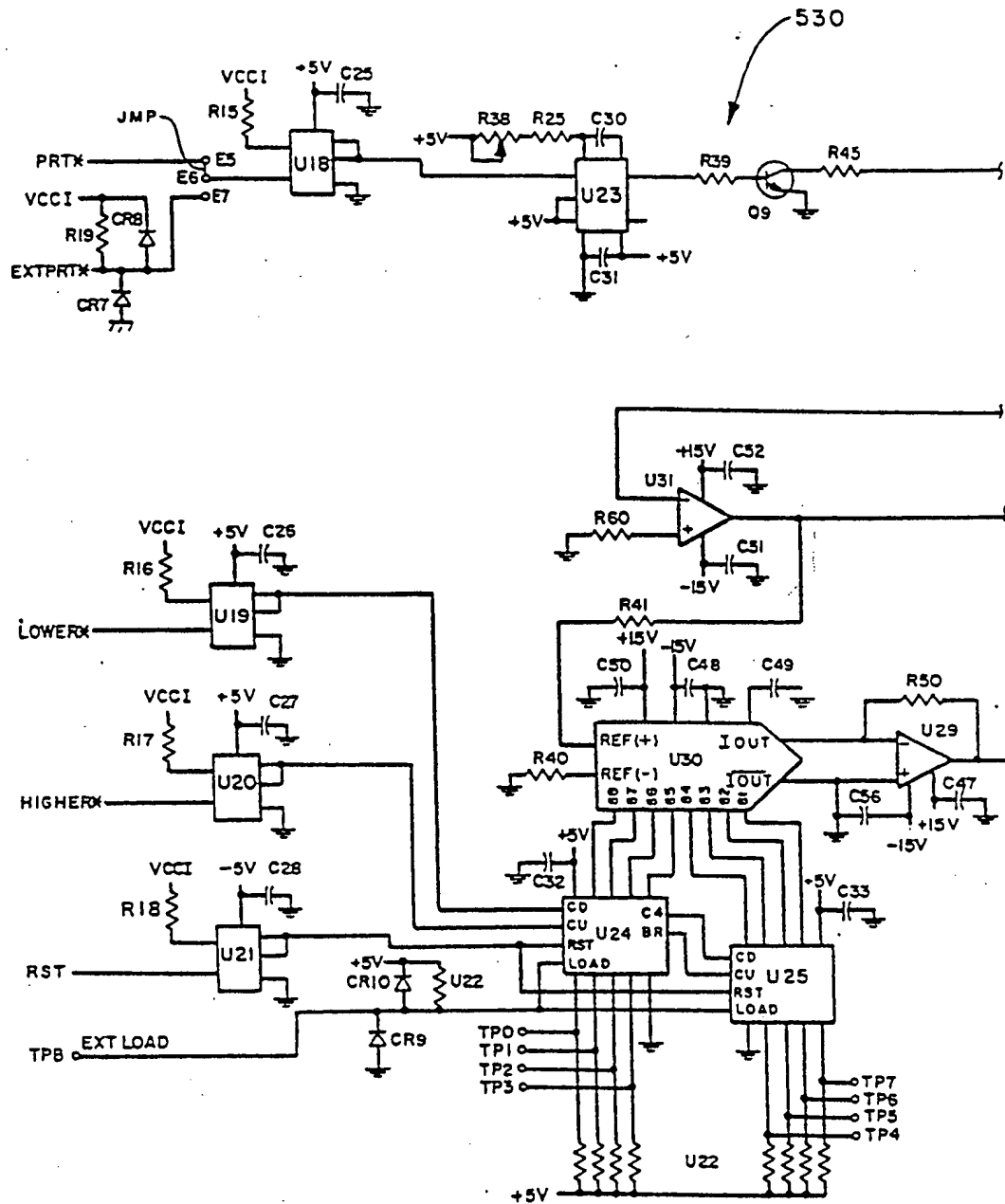


FIG. 5e

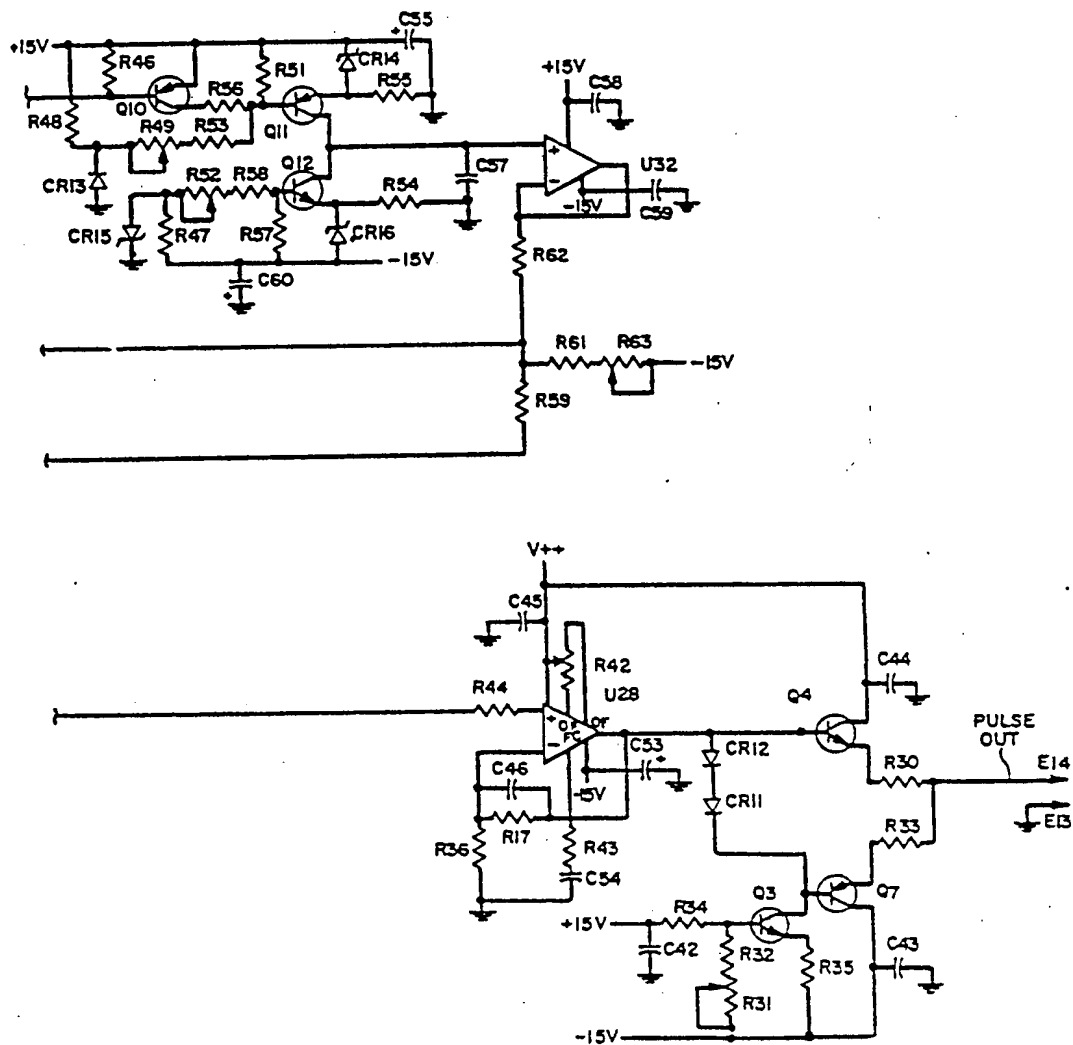


FIG. 6a

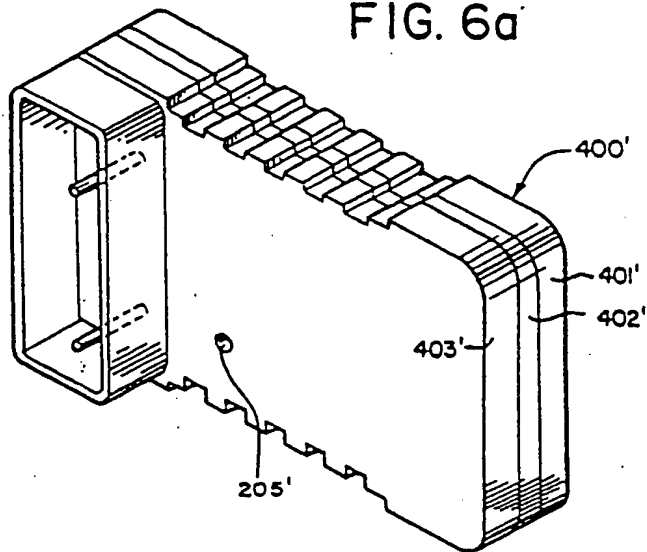


FIG. 7

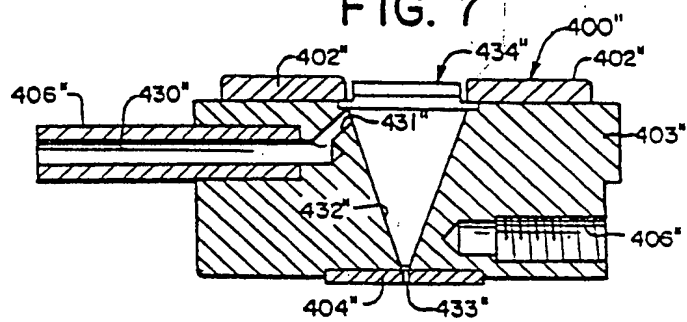
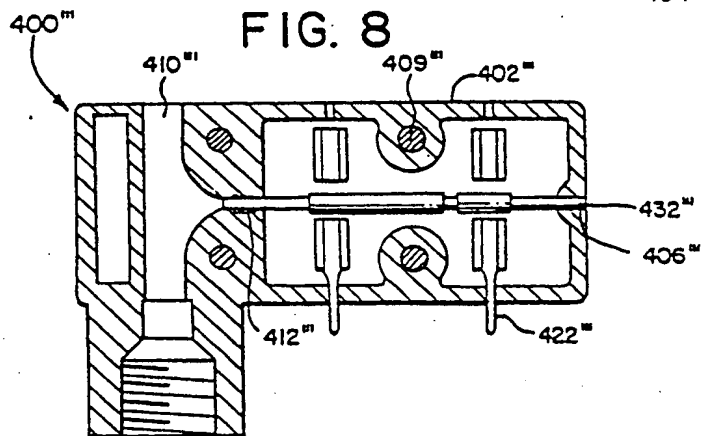


FIG. 8



M 04 . 08 95

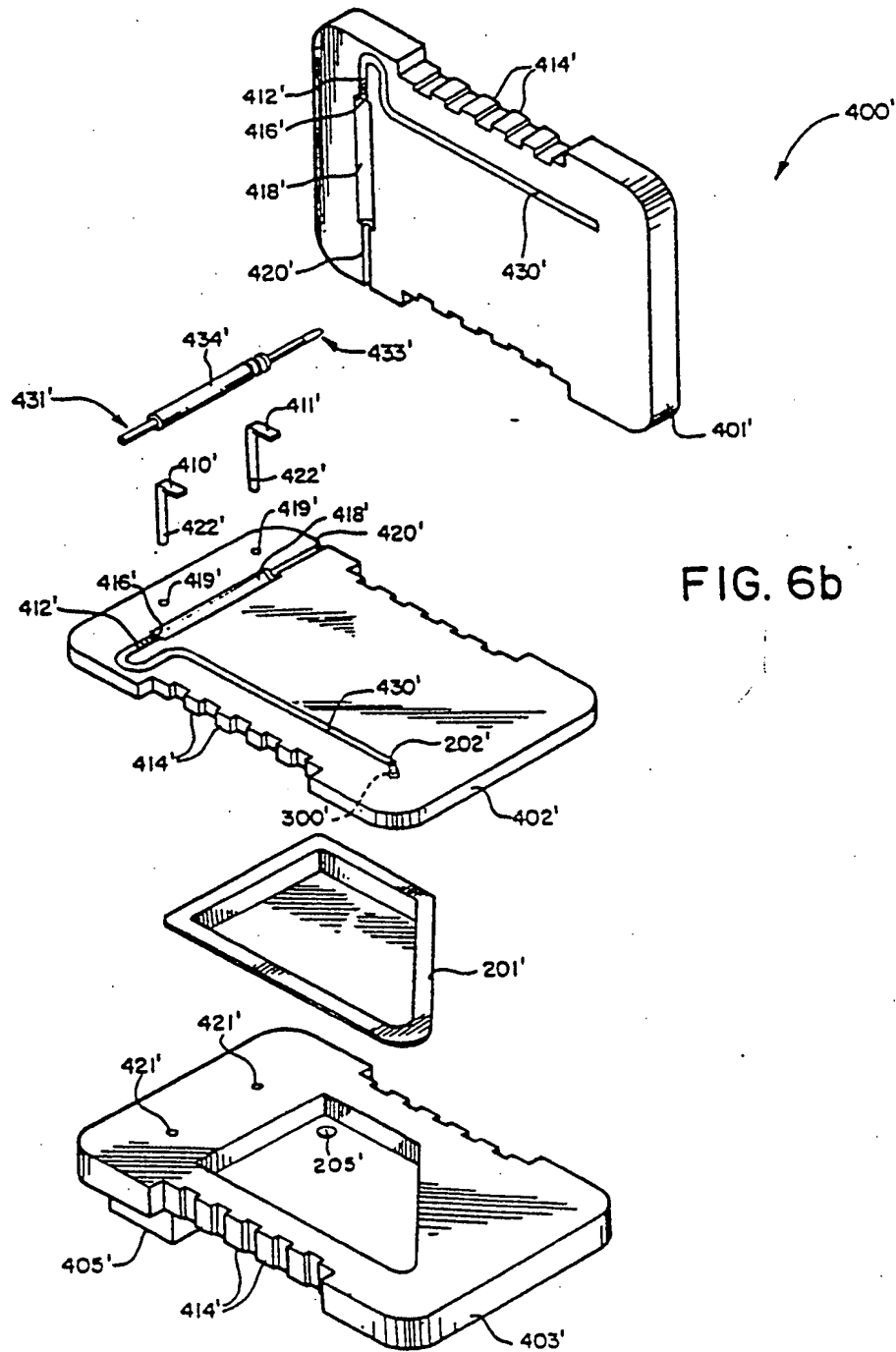


FIG. 6b

0 268 237
M 04-08 95

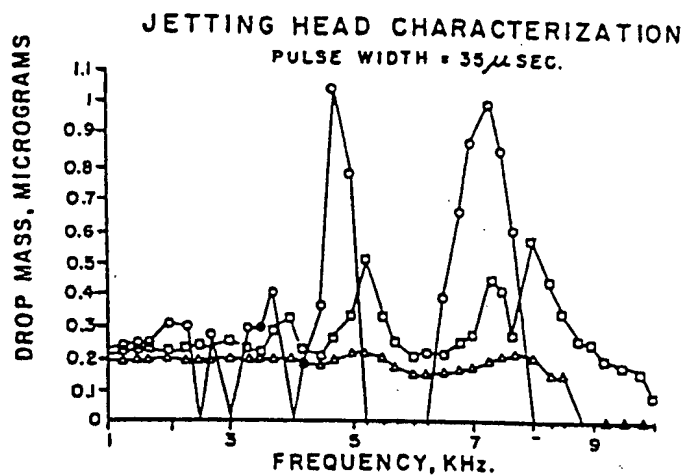


FIG. 9

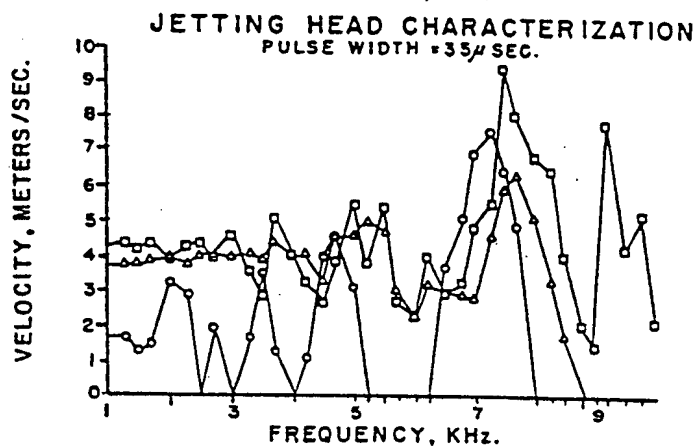


FIG. 10

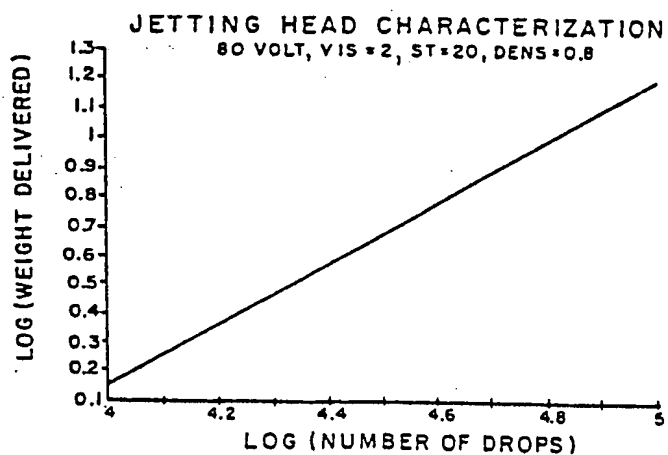


FIG. 11